

Husbandry and Trade Improv'd:
BEING A
COLLECTION

Of many valuable Materials relating to
CORN, CATTLE, COALS, HOPS, WOOL, &c.

WITH

A Complete CATALOGUE of the several Sorts of
EARTHS, and their proper Product; the best Sorts
of MANURE for each; with the Art of Draining
and Flooding of LANDS;

AS ALSO

Full and Exact Histories of TRADES, as Malting, Brew-
ing, &c. the Description and Structure of INSTRUMENTS
for Husbandry, and Carriages, with the Manner of their
Improvement.

An Account of the RIVERS of *England*, &c. and how far they
may be made Navigable; of WEIGHTS and MEASURES, of
WOODS, CORDAGE, and METALS; of BUILDING and STOWAGE,
the Vegetation of PLANTS, &c. with many other useful Par-
ticulars, communicated by several eminent Members of the
ROYAL SOCIETY, to the COLLECTOR,

JOHN HOUGHTON, F. R. S,

Now Revised, Corrected, and Published,
With a PREFACE and useful INDEXES,

By RICHARD BRADLEY, F. R. S.
and Professor of BOTANY in the University of Cambridge.

V O L. IV.

L O N D O N:

Printed for WOODMAN and LYON in *Russel-street Covent Garden*.
M, DCC, XXVIII.

A
COLLECTION
OF
LETTERS

For the Improvement of
Husbandry and Trade.

THURSDAY, Sept. 8. 1681. NUM. I.

The CONTENTS.

A preface. *A* catalogue of the books in the library of the Royal Society relating to agriculture. Enquiries concerning agriculture. Some advantages we might receive by inclosure. An account of a great advantage made by clover grass. An account of the way they cure neats tongues in London. A particular of a great gain made by the means of cole-seed. Some considerations about trade.

VOL. IV.

B

A pre-

2 *A COLLECTION for Improvement*

*A preface by way of letter to the reverend
J. B. D. D. and S. R. S.*

Reverend Sir,

THE *Royal Society* of *London* hath already procured, as you well know, a great number of books, natural and artificial rarities, experiments, collections of letters, and other ingenious discourses of a very great many subjects, as may be seen in their library, repository, letter-books, journals, and registers; but notwithstanding this, the delight they take in knowledge, and love they have for the improvement of their country, hath encouraged them to revive their committee for *agriculture*, whereto they bring (as into a common treasury) their experiments and observations, and raise such new *queries* as they think may prove to be the seeds of good effects.

Of this society and committee I have the honour to be a member, and by consequence the advantage of hearing their discourse, and perusing their library; and not only so, but some of them (I thank 'em) have helped me to such correspondence, as will, by the help of my own friends and industry, furnish me, I question not, sufficiently to make good my title.

And to you, Sir, being one whom I particularly know to be a great favourer of any thing that tends to the improvement of your country, and to whom I am obliged for very many favours, I make bold to dedicate this; advising you, that my design is often to publish such papers, as shall cause this kingdom to be so well husbandry'd, as to exceed not only the *United Provinces*,

of HUSBANDRY and TRADE. 3

Provinces, but also what on another occasion you were pleased to stile the garden of the world, *Barbadoes*.

And seeing that what the husbandman is concerned for, is the *materia prima* of all trade; and that the finding a vent for his commodities is as necessary to his end, as it is to know the ways of tilling, planting, sowing, manuring, ordering, and improving of all sorts of gardens, orchards, meadows, pastures, corn-lands, woods, and coppices; as also of fruits, corn, grain, pulse, new hays, cattel, fowl, beasts, bees, silk-worms &c. (as Mr. *Worlidge*, who hath given an ingenious account of them, hath it) therefore I design not only to give instructions for that end, but also the best accounts I can meet with, how they may be advantagiously parted with; which will necessitate me often to treat of such things as more strictly come under the second head of my title, *viz.* trade: in handling of which, I shall not, for fear of censure, swim down the current of the times, or swallow the vulgar errors; no authority shall prevail with me, though it comes from them that are esteemed the most sagacious, unless I can apprehend it to agree with sense and reason; for you know our motto is *nullius in verba*, and it is possible I may sometimes take upon me the office of being an *observator*: but seeing *humanum est errare*, and I may be mistaken as well as others, if any body in a kind manner will do the like for me, I shall esteem of him as one of my best friends; nay, if through an ill humour he shall slander me with a matter of truth, I am resolved such balms shall not break my head: I will still rejoice.

4 A COLLECTION for Improvement

Sir, the reason why I shall publish these in small parcels often, shall be to the end, that they may do the greatest good in the least time; and that not only the theoretical gentleman, but also the practical rustic may enjoy their benefits; and it is also possible, that if this way causes a greater consumption, as I reasonably think it will, the *bookseller* and I may have the better understanding.

The reason of this my miscellaneous method hath been the examples of Mr. *Oldenburgh*, Dr. *Grew*, and Mr. *Hook*, in their *philosophical transactions*, and *collections*, considering also that variety hath its beauty as well as order; and this *libertine* way of handling this matter, may perhaps prove more useful, than had I bound up my self to the severest rules.

I design to stick to this manner of print and paper, that they may easily be bound up in volumes; and though at present I am not fully resolved, yet it is possible I may in due time make for each volume an *index*.

Thus far I thought fit to say, expecting from good men commendation, from ill, censure; which was the fate of our blessed Master, and shall be of all them who are any ways active in doing the world good services; which I shall always be ready to do, unless it shall interfere with my imployment, and prejudice the honest care of my family, which is a topic I shall never part with. I know you will think never the worse for my plain dealing, and send up your prayers for, Reverend Sir,

St. Bartholomew-
Lane behind the
Royal Exchange,
London.

Your most humble Servant,

JOHN HOUGHTON.
A ca-

of HUSBANDRY and TRADE. 5

*A catalogue of the books in the library of the
Royal Society, relating to agriculture.*

Worthy Sir,

IT will I think by all be granted, that the art
of agriculture hath not been a little improved
by the use of books, and more it may, were it
well known what are written of the subject: at
present I will give you a list of what I find in
the catalogue of our library, and hereafter of
what I can meet with elsewhere.

Adriani (Presbyter.) Carmina de Venatione.
Apitius Cœlius de re Coquinaria. lib. X.
Aristotelis Historia Animalium.
Baptista Jo. Ferrarii de florum Cultura.
Di Bonardo Richezze del' Agricoltura.
Cato (M.) de re Rustica,
Columella (L.) de Cultu Hortorum Carmine script.
Di Crescentio (Pietro) Agricoltura.
Forest Laws, by Jo. Manwood.
Herbarium Ling. Germ.
Hortorum Cultura, per Lucium (Jun.) Columellam.
Macer (Philosoph.) de natur. & virtut. Herbar.
More (Sir Tho.) Utopia.
Oppiani de Venatione piscium.
De Ro. Piscibus.
De Animal. Industria (per Sym. Grynæum.)
Di Tatti (Giov.) Agricoltura.
Terentius M. Varro Agricoltura.
Tobiæ Aldini descriptio Plantar. in Horto Farne-
siano.
Herbarium (Antiq) Anglicè scriptum. M. S.
Junii Mod. Columel. rei Rustic. M. S.

6 A COLLECTION for Improvement

Herbarum nomina & Vires (Carm. Hexametro)
M. S.

Johannis de loco frumentario pars secunda. M. S.

Evelyn (Jo.) *Sylva.*

Bacon (Sir Fr.) *Sylva Sylvarum.*

Evelyn (Jo.) of *Gardens.*

Cotton (Ch.) *Planters Manual.*

Evelyn (Jo.) *Philosophical Discourse of Earth.*

Hughes (Will.) *Complete Vineyard.*

<i>Icones & descriptiones</i>	$\left. \begin{array}{l} \text{Siciliæ} \\ \text{Melitæ} \\ \text{Galliæ} \text{ \& } \\ \text{Italiæ} \end{array} \right\}$	<i>per Paul. Boc-</i> <i>con.</i>
<i>Plantarum</i>		

M. Malpighius de Bombyce.

Johnson de Animalibus.

Christoph. Merret Pinax rerum Nat. Britannicar.

Anatomy of Vegetables, by N. Grew, M. D.

Two Herbals.

These are what I have chiefly taken notice of; it is possible among so many books (upwards of three thousand) I may have overlooked some, but I think none that are material.

Sir, if your leisure will permit you to afford me some of your curious observations, I will make the best use of them I can, and you will much oblige

Your most humble servant.

Enquiries

Enquiries concerning agriculture.

Honoured Sir,

I Know your designs are good, and seldom better pleas'd than when studying the advancement of your country; wherefore I make bold to desire you, as your leisure will permit, to send me answers to these following enquiries concerning *agriculture*, which I find excellently prepared to my hand in Mr. Oldenburgh's *Philosophical Transactions*, Numb. 5. p. 79. as followeth.

I. *For Arable.*

1. The several kinds of the soils of *England* being suppos'd to be either sandy, gravelly, stony, claiely, chalky, light mould, heathy, marshy, boggy, fenney, or cold weeping ground, information is desired what kind of soils your country doth most abound with, and how each of them is prepared, when employed for arable?

2. What peculiar preparations are made use of to these soils for each kind of grain? with what kind of manure they are prepared? when, how, and in what quantity the manure is laid on?

3. At what seasons, and how oft they are ploughed? what kind of ploughs are used for several sorts of ground?

4. How long the several grounds are let lie fallow?

5. How, and for what productions heathy grounds may be improved? and who they are,

3 A COLLECTION for Improvement

if there be any in the country, that have reduced heaths into profitable lands?

6. What ground marl hath over head? how deep generally it lieth from the surface? what is the depth of the marl itself? what the colour of it? upon what grounds it is used? what time of the year it is to be laid on? how many loads to an acre? what grains marled land will bear, and how many years together? how such marled land is to be used afterwards? &c.

7. The kinds of grain or seed usual in *England*, being supposed to be either wheat, miscelane, rye, barley, oats, pease, beans, fitches, buck-wheat, hemp, flax, rape; I desire to know what sorts of grains are sown in your country, and how each of these is prepared for sowing? whether by steeping, and in what kind of liquor? or by mixing it, and with what?

8. There being many sorts of wheat, as the white or red lammas, the bearded *Kentish* wheat, the grey wheat, the red or grey pollard, the ducks-bill wheat, the red-ear'd bearded wheat, &c. and so of oats, as the common black, blue, naked, bearded in north *Wales*; and the like of barley, pease, beans, &c. The enquiry is, which of these grow in your country, and in what soil? and which of them thrive best there? and whether each of them require a peculiar tillage, and how they differ in goodness?

9. What are the chief particulars observable in the choice of seed corn, and all kinds of grain? and what kinds of grain are most proper to succeed one another?

10. What quantity of each kind is sown upon the statute acre, and in what season of the moon and year it is sow'd?

11. With what instruments they do harrow, clod, and roul, and at what seasons?

of HUSBANDRY and TRADE. 9

12. How much an acre of good corn well ordered generally useth to yield in very good ground, in less good, and in the worst years?

13. Some of the common accidents and diseases befalling corn in the growth of it, being mildew, blasting, smut, what are conceived to be the causes thereof, and what the remedies?

14. There being other annoyances the growing corn is exposed unto, as weeds, worms, flies, birds, mice, moles, &c. how they are remedied?

15. Upon what occasions they use to cut the young corn in the blade, or to feed it, and what are the benefits thereof?

16. What are the seasons and ways of reaping and ordering each sort of grain, before it be carried off the ground?

17. What are the several ways of preserving grain in the straw, within and without doors, from all kind of annoyance, as mice, heating, rats? &c.

18. What are the ways of separating the several sorts of grain from the straw, and of dressing them?

19. What are the ways of preserving any stores of separated grain from the annoyances they are obnoxious to?

II. *For meadows.*

1. How the abovementioned sorts of soil are prepared, when they are used for pasture or meadow?

2. The common annoyances of these meadow or pasture grounds being supposed to be either weeds, moss, four grass, heath, fern, bushes, briars,

10 *A COLLECTION for Improvement*

briars, brambles, broom, rushes, sedges, gorse or furzes, what are the remedies thereof?

3. What are the best ways of draining marshes, bogs, fens? &c.

4. What are the several kinds of grass, and which are counted the best?

5. What are the chief circumstances observable in the cutting of grass, and what in the making and preserving of hay?

6. What kind of grass is fittest to be preserved for winter feeding, and what grass is best for sheep, cows, oxen, horses, goats? &c.

Sir, in convenient time I may trouble you with such other *queries* as may be pertinent towards the obtaining the end proposed, and question not the assistance of you and your friends, whereby I may teach every part of the good husbandry of the kingdom to every part of the kingdom, which if I can do, and persuade them also to put it into practice, it will be a very great delight to

Your most humble servant.

Some advantages we might receive by inclosure.

Honest Harry,

I Remember as you and I were riding over the open fields from *Cambridge*, you were wondering at the peoples stupidity in not agreeing to have them much inclosed, whereby you thought might be made far greater advantages ;
I have



of HUSBANDRY and TRADE. 11

I have since been ruminating the matter, and what follows is some effect of it.

I take inclosure to be of so great advantage to this kingdom, that I am apt to think there is hardly any improvement that hath been thought on this twenty years will parallel it, no not the fishery; for it would be a means not only to employ our selves, but also in a great probability to increase us in a few years to at least two millions more than we are; and that these numbers may not seem to you monstrous, as if I were willing much to magnify the thing that takes my humour, I will give you some reasons for this my conjecture.

Captain *Graunt*, in his observations upon the bills of mortality, *pag.* 41. supposeth *England* and *Wales* to contain twenty five millions of acres of land, although I am told by one who is a great observer and inquirer into things of this nature, and also that is able to calculate as well as most folk, that there are twenty eight millions of acres, *Gerard Malines* in his *Lex Mercatoria* saith twenty nine millions, and of these it is thought that twelve millions lie waste.

Now whether there be so much waste I am not able to determine, but that there is a very great deal I suppose very few will deny: but because it is possible that by reason of our late great inclosure, there may be some over reckonings, and it may be very convenient for his majesty, and some others, to have parks, I will suppose only the half part, and that is six millions of acres.

The law would have no cottage built without four acres of land be laid to it, and it is not often that this cottager's family is composed of less than four persons; it is probable one

12 *A COLLECTION for Improvement*

with another it is nothing less (for they generally know better how to get children than estates) at this rate there would be livelihoods for six millions of people more than now: moreover the common fields that bear plenty of grain two years in three, by inclosure, and a liberty for men to manage it for their best advantage, as their necessity, ingenuity, and friends, should teach them, I am apt to think would employ more than now half that number; besides the seamen, citizens, shopkeepers, and carriers, that must necessarily attend this great people, in all they would be a prodigious quantity; but lest, as I said before, I should be thought to misreckon (although I would be glad to see more reasonable conjectures) I will modestly suppose but two millions.

If it be objected that this quantity of land will be too small for maintainance, it is answered, that our former parliaments did not think it so, and I have allowed four times the quantity; I question whether the *United Provinces* allow so great a share, but however I will tell you a short passage I met in a book written by Mr. *Robert Dalington*, entituled, *A Survey of the Great Duke's State of Tuscany, Anno Dom. 1596.* and printed at *London for Edw. Blount, 1605.* where giving an account of the country, he in p. 30. says thus:

I can avow, that going up with another *English* gentleman to the top of a steep hill some two miles, right over *Prato*, to give our eye the view of that pleasant valley, we could not discern any one piece of ground above one acre and an half in our opinions; (except the great Duke's pastures about his palace of *Poggio*) all which ground being bare, and the hedges green
with

of HUSBANDRY and TRADE. 13

with the vines, gave a very pleasant and delightful prospect, resembling very fitly a chequer table : now if the good stars raise one of them to the fortune to be possessed of one of these garden plots, and a *cappanuccia* (a silly shelter covered with reeds) thereupon, you shall never get him from the discourse of his *villa*, his *podore*, and his *entrata*, his farms, his lands, and his rents, that one would think him lord of some goodly palace, and as much land at the least as a nag might well pace about in a day ; when if you come to see it, it proves not, God knows, above the *giornata* (a day's journey) of a snail, and she, poor worm, if taken, *domage faisant*, in danger to be seized upon to the lord's use of the soil ; for snails, frogs, hedghogs, and such like, are accounted among the *delicatezze*, the delicates of *Italy*. Thus far he.

My author also farther tells me, that the landlord hath one third of the whole product, the tenant another, and the great Duke the rest, if not a better share.

Now methinks if they can do all this, and live, as they call splendidly, a whole family in effect on half an acre, surely we might live very well on thirty two times so much ; but a great many farms would be much larger, because many would leave their shares for manufactures, and to live in towns and cities.

But to this it is likely will be said, 1. 'Tis true that *Solomon* saith, *A multitude of people is the glory of a prince* : but how is it possible for these to be gotten hither ? is it likely that so many people will run from their own country to another that they never yet had experience of ?

14 A COLLECTION for Improvement

2. We have a great deal of barren land, and some of it so bad, that a hundred acres will hardly keep two cows; how then shall sixteen acres keep a family of four people?

3. Suppose all you have said were very reasonable, and really true, yet if you cannot get those to whom it belongs in the humour of doing it, what will all you have said signify?

To the first objection I answer, what *Solomon* saith is really true, and therefore I do much wonder that any who believes him should hinder the thing. And I will shew you by several instances, that profits (though sometime with hazards) draw much people; witness *Spain* with its inquisition, for how many *English* and *Dutch* protestant factors flock there daily, and quietly submit to that government, so they may have their trade free? Do they not also run among *beasthens*, and those that are most barbarous? Do they not run to the *Indies*, *China*, *Japan*, the *West-Indies*, *Guinea*, *Arabia*, *Algiers*, and other nests of pirates, *Turkey* and *Russia*? Do not the *French* flock yearly by thousands to *Madrid* to be their porters and under servants? Hath not the wealth of *Holland* drawn millions? and at home do not the country folk run to *London*, and other towns? and from *London* do they not send their factors to every place of trade in the kingdom, and hunt up and down daily to get a customer?

If these things be true, as few I suppose will disprove; and if inclosing and improving our land will employ more people, what then should hinder but our selves should fall to work, and foreigners should come hither to us as well as they or we have done to other places?

To

To the second objection, I grant we have a great deal of ground that is called *barren*, but whether much that is truly so I question; for I have seen ground whose surface was deeply covered with white sand, as if it were poured from a sand-box, and there grew turnips; upon rocky mountains, and gravelly hills, grew mighty oaks; since *clover* and *santfoin* came in fashion, there is examples enough, that acres that were not worth two shillings a year, are made worth thirty. I am told, that in *Norfolk*, as I take it, or near there, the sands are carried about almost as tides carry water, and would make, for ought I know, a good place for mummy; yet here they esteem it not altogether barren, but have sown some with hay, or other seeds, and covered it with bushes or furze, and stak'd them down till after a year or two, in which time grows a green soard, and so the sand is conquered. Were all this good husband's neighbours of his own mind, I am apt to think they might quickly make this barren wilderness a fruitful spring; and if *Hampstead* heath, and many such-like, will yield gorse and furze, fearn, wild-time, and such-like, methinks it is hard if it will bear nothing else that is profitable. I know an ingenious gentleman that has offered thirty years purchase for a small part of the aforesaid heath, as the townsmen should value it, and to give the lord's steward a considerable drinking penny for procuration.

It is these and many other considerations that makes me think the objection insignificant. Oh that I had influence enough to put it to a trial, if it did not succeed, I'd be content never to be drunk this seven years; if it were to be kept with bread and cheese and fixes for a twelve-month, I'd run the hazard.

To

16 A COLLECTION for Improvement

To the third objection I can say only this : that if people will be humourfome, they must be fo. Although I hope the *English* to be men of the greatest *courage*, yet this I dare say for a great many of them, that they are very willing to be conquered by truth, and scorn an equivocation, when they plainly see that reason deserves the victory; witness the many inclosures have of late been made, and that people daily are on gog on making; and more I dare say would quickly follow, would they that are concerned and understand it daily persuade their neighbours.

Would Lords of wastes enquire who alone it is have right of common; would tenants be content with a double value of what they can pretend to; would the poor be content with a mighty plenty, a great deal of work, and larger wages; inclosure would quickly follow.

Would they who plough in champain grounds but change their little parcels; would they who have six or eight acres together, make a ditch of six or seven foot wide and deep, and fill it if they could with water, and carry away the bank that it might not be thrown in again, hedges might chance to thrive, and in two years (tho' they to please the people might at certain times lay it open) they would raise more money than they use to do in six; would the reverend clergy not oppose, but encourage, considering that richest parishes can yield most profit; would all these things happen, or what is more than all, would our honourable high court of parliament prepare a bill to this purpose for the royal assent, I question not, but that I might live to see the two millions, and many that are now living, as many of their children born among us.

And

And why should I doubt of this, when most of our nobility and gentry are daily conversant about improvements, I do not doubt it, if two or three generous souls would but promote a bill.

This! this! 'tis inclosure will make *our yokes easy, our burdens light*; it is this will improve our lands and mines, and bring in the linen manufacture; it is this will fill our cities and country towns, and increase and vend our woollen products; it is this will bring us our neighbours arts, and get us abroad a mighty correspondency; it is this will employ all our poor, and shift them from their shelter and dens of laziness; it is this may find out some new discoveries, and increase and encourage our old plantations; it is this will, by reason of more consumers, increase our fishery, and make us want (instead of complain of) many ships; and it is this will strengthen our selves, and frighten or annoy our enemies; and why an increase of people 20 or 25 *per cent.* will not increase his Majesty's revenue to almost the same proportion, I want another *Oedipus*.

In the sweat of our brows we are to eat our bread, and that is our happiness, none eats sweeter morsels than the labouring man: if we get this inclosure, it will increase our pains, and to get employments is most mens strife; and that land is best husbandry'd that procures most money; the best way to increase labourers.

If this pleases you, persuade your neighbourhood; and if you meet with any material objections, pray let me have them, and you will much oblige

Yours.

18 *A COLLECTION for Improvement*

*An account of a great advantage made by
clover-grafs.*

S I R,

I AM very glad you have undertaken this task, and question not but that in a little time the kingdom will have reason to give you thanks, for my part I do, as very well foreseeing its advantages; if any thing I do or can may be assisting, you may command me; and in answer to the enquiry about meadow, *Numb. 4. viz.* which are the kinds of grafs, and which the best? I will tell you what success I have had by *clover.*

I have a piece of land that used to be reckoned eight acres, it was a common field, and usually by my predecessor let for three pounds the year: this I enclosed two sides of (the other two sides lying to other inclosure, being done to my hand) making a ditch five foot deep, and six or seven foot broad; and the earth thrown out, I carried off, and laid it on the land, which did me two kindneses, *viz.* improved my land, and took away the opportunity the rabble might take of filling up my ditch again; then I prepared my land as usually it is done for oats and clover-grafs, both which I sowed, and all my charge amounted to about seventeen pounds, and that year I made about twenty pounds of it, and the next year, without any great matter of fresh charge, it made me forty pounds, and it hath given me very good content since: I must confess I never mowed it, or let it run to feed, but it was eaten up by cattel at so much a head; which I did for this reason, thinking that if so
great

great a burden should have been carried off, it must have impoverished my land; but if spent there, it could not much prejudice, if it did not amend it by the water they drank, and spent on it, and the warmth they gave it by their lying on it: besides this, I think all the hogs in the town smelt it, and all the art I could use did not keep the fences good enough to keep them out.

I question not but I could do the same over again to great advantage; but it lies near me, and hath a pretty green soard, and I design to keep it for grazing.

Several of my neighbours have found good advantage by it; and other new husbandries, of which hereafter I may give you some farther account, *interim* subscribe, &c.

An account of the way they cure Neats-tongues in London.

S I R,

I Give you many thanks for your letter about *clover-grass*, and particularly for your account of the great ditch, and carrying away the mould; seeing reason among the rabble seldom doth good, I think this one of the best contrivances that ever was found out; but yet if we do increase in pasture, and do not find a vent for what it feeds, it will avail us but little: wherefore I will put you in mind of a saleable commodity, *viz.* neats-tongues, and tell you how at *London* they are rarely cured.

Take *Peter salt*, and common *white salt*, of each a like quantity, and a little *Bay salt*, with this rub the tongues very well, and pack them

20 *A COLLECTION for Improvement*

as close into the thing you salt them in as ever you can, letting them lie in brine twelve or fourteen days, or until they are pretty hard, and salt them three or four times with fresh salt in that time, putting them into the same brine again (for the brine will last a good while) be sure when you salt them that you wipe off the slimy stuff at the root of the tongue clean away; and when they have lain there twelve or fourteen days, wash them in the brine, and put strings at the tips of them, and hang them in a stove for that purpose, and with deal sawdust make a fire under them, and dry them.

The manner of the stove is thus. They use a garret chimney, and let there be at top no great hole, and they make close shutters below, then they throw sawdust enough to last three or four days; they hang the tongues on a pole, that they may hang about a yard from the fire; then they kindle the sawdust just at the edges, and when the shutters are closed, it gently burns till they be dry.

The peter salt may be had in *London* at most places where they sell salt, in small quantities, and in greater at the houses where they refine salt peter.

I humbly conceive, that if this were minded as it might be, it is not a little trade we might make of them; and in *London* there are some that make it their whole business. Be pleas'd to accept this from, Sir,

Yours.

Apar-

A particular of a great gain made by the means of cole-feed.

S I R,

Since I have been acquainted with the excellent design of promoting the husbandry of *England* as much as in you lies, I have been inquisitive after such as I think may tend that way, and I will tell you what I met with in a late journey I took to *Theobalds*.

There is a considerable gentleman who hath inclosed a piece of ground containing six acres; this he ploughed and ordered as for wheat, and about *Midsummer* he sowed it with cole-feed; he had also a hundred *Welch* ewes which he would have sold to the butchers, but they would give no more than half a crown the piece for them. Upon this, about the beginning of *November*, he put them into his coleworts; they happened all to cast their lambs before *Christmas*, some of them a month before. These coleworts fed the ewes so well, that the lambs were sold off from eight to fourteen shillings a piece; when the growth was eaten up close, he sold the hundred ewes for a hundred crowns, and then prepared his land for oats, which he sowed there, and received from each acre eight quarters; and all this losing no more time than he would have done for a crop of wheat.

This is no romance, I had it from the gentleman's own mouth more than once: his neighbours own it as much as could come within the verge of their knowledge, for they did not stand to see it thresh'd, (although his credit is authority sufficient) the ground was no new

22 A COLLECTION for Improvement

broken up ground; and for my part I do not think the matter unreasonable (as to the keeping the sheep and the quantity of oats, it is possible others may not have lambs so soon, and in some places not so good price, this being but twelve miles from *London*) for like pease so great a burthen (especially being broad leav'd) must needs keep upon the ground most of the dews and rain, and not suffer the sun so soon to exhale them, which did certainly mellow the ground, and for dung and warmth from the sheep it could not want.

I hope this will encourage others to do the like, which if I hear, it will encourage me to make farther enquiries of the like nature, *interim* I take leave, &c.

Some considerations about trade.

S I R,

THEse salute you; I am very well satisfied of the good wishes for the prosperity of this kingdom, and agree with you (if wealth be prosperity) that trade is a cause of it, and therefore wish it were better known than it is. But should I go about to teach it, I must expect to be told that I talk like an apothecary (*id est*, with more sense than the generality of people can comprehend, which I am willing to believe is the meaning of the proverb.) But however, although in this trading age I do as it were hold a candle to a great many suns, yet I am sure there are some who follow the practice altogether without, or at least with a very false theory; there are others also who do not practise,
but

but for want of a true theory, very much prejudice them that do.

Trade is a subject that hath not only taken up the thoughts and time of private men, but also, of late years especially, hath been one of the main concerns of the greatest princes; were it thoroughly inquired into, it is probable it would be found to be the source from whence most of the distractions have had their original, that *Europe* of late years hath groaned under; and the means also by which it hath enjoyed its glory, splendor, and plenty, and no small part of its useful learning. Particularly this our country of *England* hath been none of the least reapers of her benefits: and I think we have not yet attain'd the tenth part of what we might, did we but rightly understand it, and throwing away all private interest, strive to lead and persuade each other to do in this affair our utmost.

In order whereto, hoping to have a charitable acceptance for my good meaning, and to stir up some better *genius* to improve so good a work, I will consider trade in general, and particular.

And first in general, and therein I will consider,

1. What trade is?
2. What is the end we aim at in trading?
3. What is the matter of trade?

Trade (as Mr. *Lewis Roberts* in his map of commerce, *cap.* 2. saith well) is nothing else but a commutation, bargaining, contracting, or exchanging of one man with another, and by giving by one so much of one thing or commodity, to have of the other so much and the like of some one other different commodity else; for

24 A COLLECTION for Improvement

God, though he hath made man of an excellent nature, and but a little lower than the angels, and endued him with an extraordinary wit and understanding, and a body of such apt parts as will enable him to make for himself any needful or delightful thing; yet for the love he hath for his beloved charity, he hath not given to any one abilities to make for himself every thing; but as Dr. *Jeremy Taylor* saith, he provides the good things of the world to serve the needs of nature, by the labours of the ploughman, the skill and pains of the artizan, and the dangers and traffick of the merchant, &c. wherefore if we live plentifully we must by our selves or friends be traders.

The end we aim at in trading, is to procure such things as will satisfy our needs and delights, and as much as may secure us both from fear and danger: if we have this, I think temporalities we need no more.

The matter of trade is money, bills, and wares.

Sir, If these my thoughts shall gain your approbation, I shall hereafter at some convenient opportunity give you my thoughts in particular, till when I humbly take leave, &c.



THURSDAY

THURSDAY, Octob. 27 1681. NUM. II.

The CONTENTS.

The matter and use of money. An account of a great gain, and other advantages, by French furzes. An account of a book written by Mr. Thomas Firmin, intituled, Some propofals for the employment of the poor, and for the prevention of poverty, and the consequence thereof, begging.

The matter and use of money.

S I R,

I N my last I gave you an account of *trade* in general, and promised my thoughts in particular, which that I may make good, I pray accept of this about *money*.

In the beginning of the world, before the use of coin, I suppose the inhabitants thereof drove (comparatively to these times) but a small trade, or they did it with far less advantages than we (in *Europe* especially) now do, and the first inventor thereof deserved highly to be honoured: For it makes traffick to be managed with much ease, and gives us liberty to buy the just quantities for the most part our needs or designs require, which could not be so well done by swapping of an ox or sheep for pins or needles,

26 A COLLECTION for Improvement

dles, paper, or packthread. And it is metal, or any thing else, that the government of each dominion sets a mark and value on, and makes the standard of their wealth. But yet actually (as coin) is good for nothing, but potentially is good for every thing; and thus it is that *Solomon* saith, *Money answers all things.*

It is not here my purpose to give an account of the variety of things used for money, the tables of coins, the mystery of the mint, or the par between one country and another: But the use of money, as far as I can understand, is no other than as a pawn, whereby I may procure any other commodity that I shall desire, in lieu of some commodity I formerly parted with.

For instance: Suppose a country gentleman sends up to *London* a score of fat oxen, and with them designs to buy a coach, and all other necessities as are wont, when such personages come to town. It is possible the *coachmaker* and he may quickly agree, a coach for oxen, but when he goes to the *draper's*, *mercier's*, *laceman's*, various shops on the *exchange*; or perhaps when his lady is abroad in the coach, and he wants a hackney, it will then be difficult for him so to divide the bullock, as to give every one of these content, and do himself no prejudice; he then wishes that one sold every thing, but what then shall the rest of the people do? It cannot be done. Then comes an able *butcher*, or twenty, and they cry, we have no such goods as you lack; but however, for your beasts we will give you such a pawn, and so devisable, and of easy portage (the best qualifications of money) that with it you may purchase your desire, and we will warrant you as readily, as if we our selves had had

had their stores: and thus they drive their bargain.

If this be so, then surely money was never made to be an idol; it will neither fill the belly, warm the back, nor make a fan to keep a lady's face from being over-heated; and if we had as much gold and silver coin as *Yorkshire* could hold, it would do us no greater kindness, than the lead oar in *Darbyshire* before it be found doth, unless we would exchange it, and give it for a pledge for some other things that would gratify our needs, and delight us: And it is profitable to swap away some of this heap, and prudent too, and that not only to one another in our nation, but also all the world over; especially if we will be so industrious, as to make the best advantage of imported goods, that a little diligence and industry will direct us to.

If we buy a ton of pepper more than we spend, we must let it lye to rot, or send it out again. The *Indians* will not currently wear our cloth, nor consume so much of our goods, as we for use or trade abroad want of theirs, therefore will not sell a great part of them for any thing but money, which the *Dutch* and *French* will give them if we don't: If we do not give it, we have not that trade, and so make no profit; if we do give money, it will not cost above three pence the pound, but we sell it to *Spain*, or the *Streights* for seven pence the pound, or more; and if we will, we may bring that seven pence home in money, therefore we get four pence the pound by carrying out our three pence: And I am sure, when we are once so stock'd with a commodity as to be fully stored our selves, and to spare a supply to our neighbours, whatsoever we bring in more must be all

28 *A COLLECTION for Improvement*

all exported, and upon such terms, if we should yearly carry out millions *sterling* more, it would be so far from a damage, that it would yearly very much enrich us.

This exportation of money, that it is a great gain, I think plainly appears; but I have farther to add, that our hasty importations thereof, if other goods can be had, are none of our least disadvantages; for if I have in *Spain* three pieces of eight, and bring them hither, they will hardly yield me 13 s. 6 d. if I carry them to *Hamburgh*, or *Holland*, and turn them into *English* coin, and bring it over, it will not be much more; but if from *Spain*, instead of my money I shall bring to its value in wool, and manufacture it here, and carry it over; or only carry it simply in wool, and turn it into *English* coin and bring it over, it will be a far deal more; and so much more as it is, so much surely will it be more advantageous to bring in goods than money.

Neither can I apprehend, that the raising the domination of money could any ways advantage us so much as one farthing; and the greatest good it would do, would be to increase our animosities, feuds, and troubles: For supposing *England* in the singular number, and as a joint stock, the King the head, and all the rest as members of the same body, there can be no addition to the whole, by trucking one with another, no more than the natural body can grow richer, by shifting of money out of the right hand into the left: And the *merchant*, whether native or stranger, considers not, when he carries it out, what name we give it, but what profit he can make, where he designs it; and if an ounce of silver will yield him more than

than eight shillings, he will much rather carry it in bullion: And if the nation would immediately call every shilling a crown, I very much question whether they would in *France*, or any other country, buy more goods with it, than if they should call it but a groat; and I don't see that the *Scotch* pound will go for any thing more than our twenty pence. If this be so, it would have done as well to have kept our crown still at twenty pence, as it would do, if we should now raise it to a hundred and twenty, and call every peny two pence. And you see our gold will come to its real worth and agreeableness to silver, let the mint set on it what stamp it pleases; and if the law should force the contrary, our gold would soon be gone, because in other places it would yield more profit.

If any body can reasonably oppose what I have here said, and will do it either publickly in print, or privately by letter, I shall take it very kindly, and be as ready to confess my fault; but if it cannot be done, and what I have said shall appear reasonable and true, then I hope my kind countrymen and fellow citizens, especially those who would be esteemed as men that do consider, will not for the future oppose, and clamour against those men, that by these ways bring to us no small part of our wealth and happiness.

An account of a great gain, and other advantages, by French furzes.

S I R,

I Have read over your collection, *Num. 1.* and have taken notice of the enquiries, but more particularly about meadows, where, among several

30 A COLLECTION for Improvement

veral annoyances of meadow or pasture, you reckon furzes or gorse, which, I must confess, are to a great many lands a very great annoyance; but every thing hath two handles, or we have two hands to take it by, and God made every thing good, if we can but get the right knack of using it: an instance whereof I will give you in this plant.

A friend of mine had a very good meadow of about six acres; but on one side of it was a hill that was very sandy, and every time it rain'd hard, some of this sand ran upon the meadow, and would in time, in all probability, have overrun it. For this he was much concerned; and when I was there he ask'd my advice, and I did advise him to sow it with the seeds of *French furzes*, which he accordingly did, and the effect was this: It fix'd the sand, and not only so, but once in four years it was cut down, and yielded for to burn three pounds an acre. I must confess, it was in a place where wood was scarce and dear; but I am forward to believe it would have been of good advantage in many other places; and it is possible, in the sandy lands in *Norfolk*, mentioned in your letter, intituled, *Some advantages we might receive by enclosure*, in *Numb. 1. p. 14.*

What I have here related is a story I know to be true; but I will also make bold to put you in mind of what is said in *Systema Agriculturae* about this subject, and because it is short, I will transcribe it.

Furzes, brambles, &c. are very necessary for the planting of dry banks, where it is difficult to raise a better fence; and in those places they will maintain the bank against any cattel. Furzes are also sown on barren land, and esteemed a

considerable improvement; the green tops are good for horses, the pricklins thereof being taken away by chopping. Thus far he, in p. 89.

2 Edit.

Moreover I have a very good friend in *Glostershire*, who, in such land that his neighbours (by reason of a stony ground, with a shallow surface, and a want of shelter from raging winds) can get no hedges to grow in, hath brave ones, by sowing on the outside of them these *French* furzes, which shelters them both from cattel and winds.

An account of a book written by Mr. Thomas Firmin, entituled, Some proposals for the employment of the poor, and for the prevention of idleness, and the consequence thereof, begging.

THIS charitable and industrious author, after some proposals for relieving the poor, tells you the manner how they take care of the poor children in *Holland*, and that he, for five shillings the week, hath a woman that teacheth between twenty and thirty poor boys and girls to spin, some on the single, and some on the double wheel (a description of which, well cut by that curious engraver Mr. *Logan*, he gives you before his title page) and some of these earns six pence the day, besides the time allowed for learning to read, and other necessaries: he also gives directions for spinning with these double wheels.

The children being thus provided for, his next care is for grown persons, whom he will trust with materials at their own houses (and prefers it before your common work-houses) and

32 A COLLECTION for Improvement

and fears no loss, answering objections to the contrary.

After this he shews you the manner of keeping his books, and sorting his yarn, which are very easy.

Then he gives you an account of the price he pays for flax and hemp, spinning, weaving, &c.

He also shews you the effect of his work-house, in the parish of St. Botolph Aldersgate.

And last of all, with persuasions to charity, he gives advice for the release of prisoners, and concludes.

THURSDAY, Novem. 24. 1681. NUM. III.

The CONTENTS.

A letter from Dr. Robert Plott, wherein are proposed remedies against the uncertainty and loss of crops, smuts, melderws, lodgings of corn, and its being eaten up by birds. An essay to shew that the plantations do not depopulate, but rather increase or improve our people.

A letter from Dr. Robert Plott, wherein are proposed remedies against the uncertainty and loss of crops, smuts, melderws, lodgings of corn, and its being eaten up of birds.

S I R,

I Have perused your printed collection of letters, which you tell us (in your preface to Dr. B.) shall

shall be frequently publish'd, whereof I must confess I am not a little glad; and it is my opinion, that the maintaining a georgical and trading correspondence, the publication of letters domestick and foreign, and the breviates of books agreeable to such matters, will be a means to make *England* not only the most delightful, but also the wealthiest kingdom the world is acquainted with.

Therefore I cannot but applaud your design, as tending to the improvement of *husbandry* and *trade*; though I must tell you as a friend (because you have given me encouragement so to do, *pag.* 3.) that you have indeed made some very few slips in this *specimen*, which a critical enemy perhaps may magnify into errors; yet in my opinion they are by no means so valuable as to cause you to withdraw your hand from the *plough*, especially since the advancement of *husbandry* and *trade*, though of the highest concern to the nation, yet requires the least learning of any of our concerns: Proceed therefore (as the countryman says) in the name of God and prosper; and to satisfy you that my good wishes towards you herein are cordial, I do hereby promise you my utmost assistance (as opportunity shall offer it self, and leisure permit) for the publick good, this of *agriculture* (I think) being the least improved of all the arts in the kingdom, though it best deserves it as the most universally beneficial.

For whatever husbandmen are apt to conceive of their abilities, most of them believing they have brought it to the highest pitch in their respective counties; and howsoever froward they be in entertaining any thing new (though never so advantageous) beside what they have received

34 *A COLLECTION for Improvement*

from their ancestors: Yet I must be bold to advertise them, that were they really so knowing as they pretend, or would admit of such notices as might be communicated, and put them in practice, we should have no such complaints of uncertain crops, smuts, meldeaws, lodging of corn, its being eaten up by birds, and the loss of whole crops, as we frequently meet with.

But so unskilful indeed is the husbandman generally in his own affairs, so ignorant in appropriating the grain to the soil to prevent these inconveniencies, that he knows not so much as the grains themselves fit for these purposes, tho' near neighbours to him, it having been sometimes found that the very grain sown in one part of the same county, hath not been so much as heard of in another, though preferable to all others of its kind, beyond exception: witness a sort of wheat plentifully sown in the *vale* between *Thame* and *Watlington*, in the county of *Oxford*, called *mix'd lammas*, it being a white-car'd red wheat, which, though bringing a more certain crop, and yielding considerably better than most other wheats, yet not long since was altogether unknown about *Banbury* and *Burford*, and perhaps remains so to this day.

Much less are the grains of one county known in another, witness the sort of wheat called red-stalk'd wheat, sown plentifully about *Oxford*, which though endued with the excellent quality of seldom or never smutting, a conveniency that best pleases the chapman of any, yet either hath not been heard of, or is wholly neglected in most other counties. Nor less ignorant is the husbandman of *long-cone* wheat, notwithstanding its not being subject to lodging, or being eaten by birds, and its constant freedom from that epidemical

demical (I had almost said also incurable) disease of corn, commonly called the *meldew*, three inconveniencies sometimes so fatal to him, that by one, two, or all of them, he loses his crop : whereas, had he known these grains, and would have taken the pains to procure, and have used them, how free might he have been from all these inconveniencies, wherever his grounds had been liable to them.

And as it is in wheat, so it is likewise in barley ; for I cannot hear that *Patney* or *Ratheripe* barley is sown any where but in *Wiltshire*, *Berkshire*, and *Oxfordshire*, and the most western parts of *Cornwall*, notwithstanding the advantage of its early ripening, it having many times been sown and returned to the barn again in two months time, always in nine or ten weeks at farthest, which is very considerable, as well in wet and backward springs, and moist autumns, as in great drought, when other counties that sow common barley, lose their seasons and crops, as they did this very year : for not being able to sow their barley (by reason of the great drought) till after *Midsummer*, it was green at *Michaelmas* (as I saw in *Kent* and some other counties) and as I have reason to believe, never came to be ripe at all : Whereas, had they but known and used this *Patney* barley, though they sowed it not till *July*, they might have had it in their sacks again before *Michaelmas*, it always coming to be ripe in the worst of summers.

Whence it plainly appears, that could you make your self the happy instrument of communicating such notices as these to all the parishes in *England*, and so effectually as to get them put in practice ; for that is the greatest work (though one would think indeed men should

36 *A COLLECTION for Improvement*

make but weak oppositions against their own emoluments) you would (for ought I know) deserve as much of the publick as the founder of *Christ's-hospital*, and all its benefactors, and receive the acclamations and applauses of all good men, as the just reward of so great an atchievement. Which is all at present; but that if this paper prove acceptable, you may be confident of another of the like nature in a little time, from

S I R,

Your faithful friend, and humble servant,

R. P.

The plantations do not depopulate, but rather increase or improve our people.

S I R,

IN pag. 3. of these collections, I told you that I might sometimes take upon me the office of being an observator; and I will make bold to be so upon Mr. *Roger Coke's* reasons of the decay of the *English* trade, presuming him to be a gentleman that hath honestly studied the welfare of the *English* nation; and believing also that he is so little in love with his own thoughts, that he will readily change them whenever it shall appear that they were mistaken.

In pag. 7. he saith, that the trade of *England*, and the fishing trade, are so much *diminished*, by how much they might have been supplied by those

those men, who are diverted in our *American* plantations.

Observation. Had this worthy gentleman writ *impeded*, instead of diminished, I should better have understood it; for I cannot apprehend how that can be diminished, that never was, but only might have been.

In his annotations upon this proposition (and two corollaries following, which I may consider some other time) he saith, before we had our *American* plantations, the coasts of *England* were in a convenient manner planted; and the multitudes of inhabitants in *England* such, that in the 2 and 3 *Phil.* and *Mary*, the parliament taking notice that a great number of persons within the realm had laid their lands, farms, and pastures to feeding of sheep, oxen, runts, scrubs, steers, and heifers, and such like beasts and cattel, whereby was grown great scarcity of cattel, and necessary sort of victuals for sustenance of divers sort of people within this realm, and more like to be, if speedy remedy were not provided; therefore several provisions were made for breeding and rearing of cattel, &c. but now it is otherwise, we want people to eat up our product, as in p. 10.

Obs. This gentleman's drift is to shew, that our plantations depopulate us, which I take to be a great mistake, and I will shew my reasons for it.

But first I beg this to be granted, that if an *Englishman* be brought to earn and consume ten pounds a year more than he was wont; and to add to the nation as much strength as a foreigner would have done, it is as good as the coming in of a foreigner so qualified. If this shall be granted, then I say, if interest won't lye, and

profitable employments will draw people, our plantations in *America* have not prejudiced our coasts, that were in a *convenient manner* planted; for they have increas'd the profitable employments, not only by building of ships, carrying out our manufactures and products thither, but also by returning theirs hither to supply our selves, and also a great part of the rest of the world: and if it should be said that they might have consumed as much if they had staid here; yet it cannot be said that we should have employed so many men in building ships, and carrying and recarrying, as now we do: I am apt to think it might be made out, that it is a wheel to set most of our other trades a going. Sir *Walter Raleigh* in his observations about *shipping*, saith, that in the twelfth year of Queen *Elizabeth*, the men of war of *England* were but thirteen, and the trading vessels a hundred thirty six; and if since our plantations these have been *diminished*, I leave the world to judge; although I will not deny, but that when the whole nation were obliged to keep fish-days, there might be upon the coast a great many fishermen; yet I believe, that if there be any decrease of them, it is the disuse of those fish days; and the acts in the 2 and 3 of *Phil.* and *Mary* 3. 13 *Eliz.* 25. 7 *Jac.* 18. by him mentioned (which may have caused a great increase of flesh) that may have done it, rather than the increase of our plantations.

And I must confess, although I have a high esteem for acts of parliaments, yet my eyes are not good enough to see how the laying of lands, farms, and pastures, for the feeding of sheep, oxen, and other cattel, could possibly cause a neglect of rearing up young cattel, unless they knew

knew how to have them from another country, or were willing when their fat cattel were destroyed to have no supply.

I am very sensible of the great advantages that accrue by a popularity, and I wish *England* as full again as it is ; and one way to do it, I think may be as follows.

I would advise, that one hundred thousand *English* should quickly be sent to *Jamaica*, foreseeing that others would supply them with *negroes*, and other servants and slaves, as long as ever they could give an encouraging price.

Now I will suppose that the people of *England*, one with another, may earn ten pounds *per annum* (although others won't grant so much) if so, then if the going away of one man causes *England* to get twenty pounds *per annum*, more than before ; it must either improve or increase two in his room : they say, that for every white in *Jamaica* or *Barbadoes*, there are ten blacks, I will suppose but three ; and it is also said, that if these blacks do not produce what sells for their first cost the first year, it is not worth their masters while to buy them ; if so, these three blacks costing sixteen pounds *per head*, must procure to the value of forty eight pounds, which when brought into *England*, and sent into *Holland*, or other places, seldom or never yields so little as sixty pounds, which (if there were no abatements for our own consumption) must by the aforesaid rule increase, or improve us six people ; I don't forget the *English* that die, nor the blacks that I have under reckoned, nor the *Scots*, *Irish*, and other *whites* that go thither, and may look after three blacks apiece as well as the *English*.

40 *A COLLECTION for Improvement*

More than this, it is almost the constant practice of those that go for the plantations, to return again as soon as they have got estates; and by the same rule we must send no factors to *Spain, India*, or any where else; nor soldiers to *Tangier*, or the help of our neighbours; neither must we sow any corn at seed time, because *the more we throw away, the less we have*. A great many that are gone abroad would have been hang'd, were it not for the plantations; others that fled upon the account of religion, debt, or any other misdemeanor, would have gone to *Holland*, and other places, as a great many actually have done; and the *German* princes, that have no plantations, cannot keep their subjects from running the same way. But above all, famous are the *Scots*, who, though they have no plantation, yet run about, and disperse themselves, to take possession of every corner of the known world.

I should be very glad if I could be an instrument to detect any vulgar errors, especially such as tend to hinder the improvement and populacy of this renowned kingdom; and on the other side, to hint any thing that may tend to its welfare and satisfaction; which if I have, pray encourage; if not, shew it.

Mr. *Coke* hath brought instances from the *Dutch* and *Spaniard*, to back his assertion; of which you may hear more some other time.

THURSDAY

THURSDAY, March 16. 1682: NUM. IV.

The CONTENTS.

The manner and advantage of planting liquorice. An essay to prove that it is better for England to have Ireland rich and populous, than poor and thin.

The manner and advantage of planting liquorice.

S I R,

ALthough I am no enemy to our merchants, and wish that this *island* were the store-house for all the goods that foreigners can bring; yet I would also have as many things produced at home, as can profitably, or without hindring better employments, possibly be effected. And I think *liquorice* is one commodity that might very much (for the kingdom's advantage) be increased: the method of ordering it, is after this following manner.

Having a piece of ground fit for the purpose (suppose it new ground) that is at least two foot and a half good mould, if it be three or four foot deep, it is so much the better: at one side of this, about *Michaelmas* tyde, they dig a trench, if the ground will bear it, four foot deep, and wide enough for a man to work conveniently in it, throwing the mould on that side
that

42 A COLLECTION for Improvement

that must not be dug farther. Then they dig another trench to fill up this, laying the mould as light and fine as they can; and so successively one after another, till they have worked out their designed plat: then to fill up their last trench, they fetch with barrows what they threw out of the first.

This being done they procure their *sets*, which are taken from that part of the *liquorice* they call *runners*; which are sprouts running from the crown or thick end of the root, streight forward, just under the surface of the ground; from these *runners* they cut off pieces, having each three joints, which they call *sets*.

These *sets*, if kept in good mould, may be kept three or four months, and by consequence be sent to our *American* plantations, or any where else that can be reach'd to within that time; but they must be kept but very little while out of the earth, before they are planted.

The manner of planting is in *rows*, at least eight inches distance, making holes with a stick, and putting them in, and covering them; and the *rows* must be a foot one from the other, that there may be room to *hoe* them.

The first year there may be *lettuce*, or several other garden stuff set among them: and some will have the *rows* a foot and half, or two-foot asunder; that they may sow *leeks* or other matters two years together.

The ground must be kept well hoed and clean, that the weeds spoil it not; and when the leaves fall off, they cut off the tops, which serve for little, except to burn or mend hedges.

At the end of three, or sometimes of four years, according as the markets direct them, they take it up after this manner.

At

At one end they dig a trench as before, and so dig on, till the roots being bare from the mould, a child may take them out, and this digging, with the help of some good *horse-dung* mix'd with it, serves for a new plantation.

When they have got up the *roots* they trim it (that is, cut off the *runners* and *suckers*) and tie it up in round bundles of diverse weights, according as they think best to please their customers, always putting the smaller in the middle, and the handsome large streight sticks on the outside.

From the *crown runners* they make *sets*, which they sell for five shillings a hundred, more or less, according to the demand for them; of the rest and the small roots they make *juice of liquorice* and *powder*.

It is very seldom they plant the same ground with *liquorice* thrice together; neither is there a necessity for new ground, but any good garden ground that is deep enough and dry, may do at any time.

Liquorice is sold according to its plenty or scarcity, from twenty shillings to six pound a hundred; and where it proves any thing well, you may expect half a hundred from a *rod*, one hundred and sixty *rod* make an *acre*, therefore eighty hundred from thence.

At *London* they give four, six, or eight pounds an *acre* to plant it on; from *Pomfret* in *Yorkshire*, and some other places, they send a great deal to *London*: and whether other places in *England* might not make as good profits by this, as they do with some other of their *husbandries*; I must leave them to judge that will make the trial.

44 A COLLECTION for Improvement

The sooner it is fold the more it will weigh, and the better it pleases, every one being for green *liquorice*; but it may be kept indifferent well in a cellar, or boxes covered over with earth or sand.

We never yet, that I could hear of, were so much clog'd with it, as to keep out *Spanish roots* and *juice*.

The uses of it are innumerable; and for them I will refer you to the *London*, and all sorts of *dispensatories*.

Sir, if this may be any ways serviceable, you may farther command, &c.

An essay to prove that it is better for England to have Ireland rich and populous, than poor and thin.

S I R,

I N number 3. p. 36. of these tracts, I partly promised some considerations upon Mr. Coke's two *corollaries* mentioned in p. 7. of his discourse of *trade*; entituled, *The Reason of the Decay of the Strength, Wealth and Trade of England*; where he saith, by the same reason (*viz.* as they are diminished by our *American plantations*) the *trade* of *England* and the *fishing trade* are so much more diminished, by how many are diverted from supplying them, in repeopling *Ireland*, since the late *massacre* and *war* there: and in the second *corollary*, by so many as extraordinarily died in the great *plague*, 1665.

I make no question but that the *massacre* in *Ireland* was a most barbarous action, and to have 300000 killed, was at that time a very great loss to that kingdom: but the consequences of it were,

were, that the *English* went over apace, and there by beating the rest and occupying their lands, have made *Ireland* so well to thrive, both in people and wealth, as to raise the King a considerable revenue, and to be look'd on as one of the great *trading* countries of *Europe*; and it is growing greater and greater daily, and I wish it may, although it were helped on by a *million* more of our *people*; and for my reasons I refer you to *Num.* 3. of these papers, p. 35, 36, 37, 38. where I have shewn that the *plantations* do not depopulate, but rather *increase* or *improve* our people.

It is my opinion, that it is better for *England* to have *Ireland* *rich* and *populous*, than *poor* and *thin*: for so it will be for the *safety* and *honour* of the Crown, and *wealth* and *improvement* of the *English* nation.

First, for the *safety* of the Crown. If *Ireland* grows more *rich*, it will be among the *industrious* or *lazy*; and I think the *industrious* and they will be *strangers*, *English* or *Irish*. If *strangers*, they come from places of worse living, to live there better, and their interest will be lock'd up in the welfare and prosperity of that *island*; nothing but hopes of getting the whole to themselves, or helping another Prince to it, that shall be a better *landlord* than the *King* of *England*, can encourage them to endanger it: and what reason (they being of diverse countries, and dispers'd into several parts) there is to fear it, I can't see: their children being born among, and living with the *English*, will be such.

If *English* they will be the better able to curb the rest; and remembering the happiness they enjoy under the *English* Monarch, they will hardly be tempted to wish for any of his neighbours;

46 A COLLECTION for Improvement

bours; it is by his favour they enjoy their lands, religion and trade.

If *Irish*, they will grow like *English*, and will make mix'd marriages, and will have the same dependencies on *England*, and *trade*, as the *English* have.

Let it be what sort of people it will, their *expence* will be agreeable to their *wealth*, and so will increase the King's revenue; if what he already hath will bear his charge, the overplus must come to his *exchequer*, or else he may with it add to his nine thousand men, and thereby increase his *force* or *dependants*.

The increase of *Ireland* will increase its *shipping*, and consequently seamen, which will be always in time of *war* at hand, as an additional strength to our *English* fleet; as will likewise be their *landmen* for an *Army*. Their *harbours* will be more secure for us, and will be able to annoy a near or passing *enemy*, and secure an *ally*. It will be easier for them to cross the proverb,

*He that will England win,
Must with Ireland first begin.
And, Vis unita fortior.*

Neither is there danger from their *increase* of shipping, or *wealth*, because the more they have to lose, the more obedient they will be to them that can take it from them, which at any time may easily be done, if his *Majesty* by their *rebellions* should be justly provoked.

Secondly, For the honour of the *Crown*. It is much more honourable for a *King* to rule a *rich* than a *poor* people. If *riches* increase, *nobility* and *gentry* will; and greater and more honourable will be the King's *retinue*. According to

his *wealth* and *strength* is his *reputation* in the courts of all the *princes* he hath to do withal. I think here is enough said for these two.

Thirdly, For the *wealth* of our nation. I seldom know *honour* and *safety* without *wealth* and *improvements*. But particularly, the richer *Ireland* grows, the more *wealth* will the *landlords* have, and the more will they that live here spend. I am told by an inquisitive and understanding *Knight* that hath a great estate there, and very well understands the *Irish* affairs, that what their *gentry* spend here, with the *pensions* and the *rent* that is paid from thence to the city of *London*, amounts to about three hundred thousand pounds *per annum* now; and I see no reason why this expence should not increase according to their thriving. Will not the more expect *preferments* from, and love the *delights* of the court? And will they not flock from *Ireland* as well as they do from *Yorkshire*, or any of our remote countries? They will consume more of our peculiar *products*, and all *foreign* merchandizes, that we can sell them as cheap as others, which will be very great, for we do serve all *Europe* with abundance. They will never share with us in our *plantations*, except it be to afford people to increase them; if any of their ships do go thither, they ought to touch at *England*, and pay their *customs*.

But it will be objected, though the *rich* and *curious* will flock hither, yet the *laborious* would go thither, and they would be much the greater number, and would carry away our *trade*; and if Mr. *Thompson*, *Nelthrop*, and their partners had held, you would quickly have seen the ill effects.

48 A COLLECTION for Improvement

To which I answer; I believe it a new thing for the *poor* and *industrious* to lessen (except by growing rich) from those places that daily increase in people that are *rich* and *curious*, especially if no oppression be the cause; but if they should, I question not but others for gain might be invited, though it were from *India*; and seeing in likelihood we shall still keep the *East* and *West-India*, *Guinea* and *Turky* trades, and lie more conveniently for *Flanders*, and all that is east of it, and also have the great stocks and repute; why must we think (having these advantages) that *Ireland's thriving* must make us *poor*? And if Mr. *Thompson's* design had set up the *woollen* manufacture, I question whether they could in *cloth* do more than the *Dutch*, for want of *fullers earth*? And for other *manufactures*, why might it not put both nations at strife, to find out some new consumptions, and so increase the trades of *both*? It doth we see in other places; for the *Dutch fine cloths* have only served for *patterns* for us to build a great trade upon; and the increase of *traders* in all our country towns, have not at all made them dwindle at *London*, and the going of *citizens* to the *court end* of the town, have not at all lessened our *markets*, *taverns*, or many other *tradesmen*. If there must be but a set quantity consumed, seeing *England* bears up against, and in clothing outdoth the *terra firma*, why may we not, if *Ireland* be joined to us, spoil the *trade* on the other side, and so be both enriched? It is thought by some, the *woollen trade* here is capable of a double improvement; but if we should part with a little of that, and get a threefold profit and employment by other *trades*, I know not where is the damage.

Fourthly,

of HUSBANDRY and TRADE. 49

Fourthly, For the *improvement*. If what I have already said shall be granted, then I think you will easily believe, that *safety*, *honour*, and *wealth* will cause *improvement* of our lands and arts.

If any body can answer what I have here said, I shall be very ready to change my mind, but if they cannot, let us every one, as much as may be, encourage *Ireland*, till it grows so rich, that by being twisted into a cord with *England* and *Scotland*, it may be too strong for all *foreign powers* either to break or weaken, which is the hearty wish of yours, &c.

THURSDAY, April 27. 1682. NUMB. V.

The CONTENTS.

A letter from Mr. John Smith, for a new way of curing smuttiness in corn. Some account of the plague, 1665. Spain not prejudiced by its plantations. Prodigality, or mens spending their estates, doth not prejudice the nation.

A letter from Mr. John Smith, for a new way of curing smuttiness in corn.

Worthy Sir,

IT being an undoubted truth, that experiments are the best materials for advancing or building a solid body of *philosophy* withal; I shall by these lines give you an account of one, that,

VOL. IV. E I think

30 *A COLLECTION for Improvement*

I think not improper for that purpose, viz. that discoursing one day with a person of good integrity and credit, concerning *husbandry* affairs, I shewed him the letter of Dr. Plot, published by your self, where some remedies are proposed for preventing *smuttiness* in corn; and the way of *brining* and *liming* being of good credit for that purpose, he told me that he had an experiment that would much contradict the reason of that practice: for being *bailiff* to one Sir *Thomas Draper* of *Sunning-hill*, who having lands in his own hands at a place called *Cilchester* in *Hampshire*, this person, by name *Barnaby Denton*, was employed to manage the same, and having some of it fit for *sowing*, he bought the best *wheat* for seed that could be got, which he did *brine* and *lime*; but in the *brining*, he observed much of the corn to swim on the top of the *brine*; this he scum'd off, and kept by its self. He told me that much of this light *corn* was as fair as any of the rest, though some of it was small and lean, but all of it, if broke, or cut, seemed as white and full of *flower* as that which sunk; the seed so *brined* and *limed*, he sowed in the field, and the light *corn* that swam at the top of the *brine*, he sowed on a *headland* in the same field; it was *brined* and *limed* as the other was: when reaping time came, there was not a *smutty* ear to be found in the whole field, that was sowed with the *weighty corn*: but on the *headland*, where the *light corn* was sowed, there was scarce one ear in ten that was not *smutty*; yet this was *limed* as well as the other: therefore he thinks if *seed* had the lighter part separated from it, it would prove a better prevention of *smut* than any other way yet found out. Sir, if this may be any way serviceable to
your

of HUSBANDRY and TRADE. 31

your design of collections for *husbandry and trade*, I shall be much satisfied, and farther encouraged to communicate some other curiosities I have by me, who am,

Yours, desirous of knowledge,

John Smith

Some account of the plague 1665. Spain not prejudiced by its plantations. Prodigality, or mens spending their estates, doth not prejudice the nation.

S I R,

IN *Numb. 3. p. 36.* I partly promised some remarks on Mr. Coke's thoughts, in his second *corollary*, p. 7. viz. 'The trade of *England*, and the *fishing trade* are so much more diminished, by so many as extraordinarily died in the great *plague*, 1665.

I must confess that was a sad time, especially for the city of *London*, and few of my years were more sensible of it than I; for I was then an apprentice with Mr. *Upton* that is master of the *Pest-house*, and upon that score had more opportunity to hear complaints, and see miseries, than most other folk had: for although my master, and some other that related to the *sick* and *dead* had very great *trades*, yet *London* was so thin, that I saw before *Drapers-hall* behind the *Exchange*, grass growing of a considerable length. But what was the effect of all this, but that our citizens being forced into the coun-

try, there fell to trading, and there by their example and converse, taught the people so much the knack of it, that they have been eager upon it ever since: and this to me appears plain; for although we were then in a war with the *Dutch*, and the next year a great part of our city burn'd to *ashes*, yet we have increas'd more in trade since that time, than it is probable any nation hath done in the like space; but God send us other causes for such effects.

My author is farther pleased to think, ' That
' our *plantations* have greatly prejudiced us, and
' the contrary advanced the *Dutch*.

' That *Spain* is exceedingly lessened by its
' acquisition of the *West-Indies*.

' That we are prejudiced by the laws for the
' poor, and their living upon *wastes*, *commons*,
' *chases*, and *forests*, the laws for *hanging* and
' imprisonment for *debt*.

Some of which I can in a great measure comply with, although it is probable the main fault in the *laws* is the want of due execution. But *Holland* hath been as eager to carry men to the *East*, as we to the *West-Indies*, which colonies, with some other necessities, have caus'd them to increase their other *trades*, and not their want of *plantations*. For parallel, should we destroy most of our other *food*, I question not but we should quickly outdo them in *fishing*.

As for *Spain*, it is strange that what makes us, should spoil it; and most of the considerable *Europeans* are eager for *plantations* as well as we; it is the great support of the *French* fleets: and the *Dutch* are loth to part with *Surinam* and *Currisaw*. No, no, it was eighty eight, and some other times since, that their *fleets* have been worsted, their not encouraging *traders* in their

own country; and as this worthy gentleman (in p. 11.) hath rightly hinted, the *inquisition*, with some other matters, hath been the cause that *Spain* is now at so low an *ebb*.

In p. 18. of the abovesaid author, the seventh *corollary* saith thus; ‘ By the same reason the ‘ *trade of England*, and the *fishing trade* are so ‘ diminished, by how much money, and so many men as are diverted from supplying them, ‘ in buying and mortgaging land.

‘ P. 5. For money is a convenient mean to ‘ improve *trade*.

And in his *annotations* on this *corollary*, like a *worthy gentleman*, he laments that estates in tail should not remain to the *donee* and his heirs, according to the form of the gift of the *donor*; and for want of issue of the *donee*, to revert to the *donor* and his heirs, according as by the statute of *Westminster* 2. made the 13 *Edw.* I. c. 4. it was provided.

‘ By which this kingdom might be enriched, ‘ and the *trade* thereof encreased nine ways.

‘ 1. The will of the *donor* would not be violated.

‘ 2. The vast and wild prodigality of vain ‘ *men* and *women* would be restrained within ‘ the bounds of their estates, and the *impoverishment* which they bring upon the *kingdom* by ‘ their *pride*, *vanity*, and *luxury*, in a very great ‘ measure, would be abated.

‘ 3. The *families* of the *nobility* and *gentry* ‘ would hereby be preserved and continued.

‘ 4. The multitudes of *solicitors*, *bankers*, ‘ *scriveners*, and *usurers*, who now swarm more ‘ than ever, and devour all the good of the nation, but no ways do any good to it, would ‘ diminish; and these very men be necessitated

54 A COLLECTION for Improvement

‘ to seek some better means of subsistency,
‘ whereby the kingdom might receive benefit,
‘ now we so much want hands to advance the
‘ *trade* of the nation.

‘ 5. The *supernumerary* pages, *lacquies*, and
‘ *waiting-women*, who are *moths* to fret and
‘ consume their masters and ladies estates, might
‘ be employed in ways beneficial to the king-
‘ dom.

‘ 6. The stock of the nation to be employed
‘ in beneficial *trades*, would be tenfold more
‘ employed in them.

‘ 7. The riches acquired by *trade* would con-
‘ tinually be employed in it, as well as in the
‘ *United Netherlands*.

‘ 8. The *interest* of money without a law,
‘ would fall to be as low as in the *United Ne-*
‘ *therlands*.

‘ 9. Men would be more intent to improve
‘ their estates, when they know what they
‘ must betake themselves to, and may more se-
‘ curely follow their business, than when they
‘ are engaged in *law-suits* about *mortgages* and
‘ *titles of lands*.

To which I answer, that considerations about
men buying and mortgaging land, will come
under the fourth way of enriching, above men-
tioned.

To the first way I grant, it is pity the will of
the *donor* should be violated, unless it be against
the law, and if our judges cutting off *entails* be
so, let them answer it, I will not pretend to it.

To the second way, if by *prodigality* he means
spending beyond estates, by *pride* all sorts of fine-
ry, by *vanity* spending upon shews, plays, and
such like, by *luxury* eating and drinking high;
then I offer:

That

of HUSBANDRY and TRADE. 55

That those who are guilty of *prodigality*, *pride*, *vanity*, and *luxury*, do cause more wealth to the kingdom than loss to their own estates.

My reasons take as followeth; and first for *prodigality*, whatever the *prodigal* spends, it is in matters native or foreign; if native, there can be no prejudice to the whole, because its being but one, and he a member of that one, he gives to himself, as I have shewn already in p. 26 of these papers. And I think it is universally granted, that whatever any country spends of its own, if it be capable of a supply, will never hurt it; nay, to consume a great deal will be a convenience, if not an advantage, by finding employment for a great many idle people. But if these people should happen to make any more goods than will supply their own country, the overplus must march abroad, and whatever is brought in for that, will be profit to the nation.

If in matters foreign, that will also be a great advantage, as well as a security to the nation; for it will increase our seamen, and by consequence our naval strength. How shall we expect trade to other places, if we will consume none of their products? Neither will the saying, *We may bring home money*, satisfy; for then we must not trade to those places where money is not to be had, and where it is for no greater quantity than the money they can spare, and by consequence our ships must come light home, which will make the freight outwards so dear, that others will out sail and out sell us; an example hereof is plain to me in the *Guinea trade*.

The *Dutch* sell blacks to the *Spaniard* for high prizes in money, and want the freights home; we sell for less to the *English*, but are

pretty well freighted home; and by this means the *Dutch* factories in *Guinea* are in some measure furnished with *English* goods, and there is some hopes that in small time they will have no body left there to buy.

In *Numb. 2.* of these papers, I have already shewn that it is no advantage to bring home money, if goods can be had that make more bulk; to which I refer you.

Our *prodigality* in wearing of silk hath been the main prop of the *Turkey* and *East-India* trades, and it hath encreas'd us such a manufacture, that in time may spoil the *silk* work of all *Europe*: besides, if *wine* and *brandy* should be urged to me, I think I can answer it too, and it is likely may sometime, when the balance of trade between us and *France* may also be considered.

Furthermore, I pray consider the *prodigal's* life. I will suppose his parents leave him a great estate in land, the income whereof he spends, and borrows more, and when much straitned mortgages his land for more; then he racks his tenants to pay this interest, which puts him upon new projects and industry, how they may live as well then as before; for as our proverb saith, *Necessity is the mother of invention*. Which projects and industry they never before could be induced to, because their rent was small, and their livelihoods came in, as it did with their forefathers, very easy; witness the great improvement made of lands, since our inhuman civil wars, when our gentry, who before hardly knew what it was to think, then fell to such an industry, and caused such an improvement as *England* never knew before.

The next thing the *prodigal* doth is cutting down his *woods*, which yields him some money for others to employ towards the enrichment of the nation; and the land being turned to *pasture* or *arable*, yields every year twenty or forty shillings, besides the profits from beast, or two years in three, three, four or five pounds each, besides collateral advantages and employments; whenas it is rare the *woodlands* yield above six pounds an acre, once in thirteen or fourteen years, and no employment almost for any body till then, except once in a great many years, when they fell their *timber*; and all together it makes nothing comparatively to the other ways, as hereafter I may shew at large.

After this he sells all, and when that money is spent, if his *debaucheries* kill him not before, he betakes himself to the *King's-bench*, or some others lay him in a worse prison, where, if he be not hang'd, he lives with a miserable crew till he dies, or a five pound act releases him, where by his hardships he thinks he may be the better able to endure hell's torments.

But sometimes, like the *prodigal* in St. Luke, he returns to his father, and by his knowledge in wickedness, he is better able to detect the ill designs of others; and not seldom, though late, proves a good *subject*, and *useful member* to his country.

Sometimes before all is gone he goes abroad, and valiantly fights for his country, that he may regain his honour; sometimes he makes new discoveries, and finds out witty and useful inventions, examples whereof could be given innumerable, both *antient* and *modern*; and all this while a great many *trades* are encouraged,
and

58 *A COLLECTION for Improvement*

and a great many folk thrive from him, but where the nation loses a penny, I see not.

I would not be thought to encourage this sort of *prodigality*, and know well enough, that by a generous careful high living the nation may thrive as well; as hereafter I shall shew you.

THURSDAY, May 18. 1682. NUM. VI.

The CONTENTS.

A letter from the ingenious Mr. Adam Martindale of Cheshire, about improving land by marle. That our high living is so far from prejudicing the nation, that it enriches it.

A letter from the ingenious Mr. Adam Martindale of Cheshire, about improving land by marle.

S I R,

BEing returned from a journey I met with your's lying ready for me: and (as my worthy friend Mr. *Collins* informs you) I am very willing to promote any ingenious project for publick good; but besides what ariseth from mine own insufficiency (having little skill in *agriculture*, and less in *trade*) I labour under great discouragements, in reference to that little which I know, from the conceited surly humours of people,

people, that will not be beaten out of their old roads, by the most powerful discourses bottomed upon reason, and backed by the experience of wise and faithful persons. To what else can it be ascribed, that the *speaking-trumpet* (so notably fitted for the use of *criers* in great *courts*, and proclaimers of things in *tumultuous markets*) should find little more entertainment than to be ridiculed in *plays*? Or (to come nearer the matter) what else can be the reason why the great *advantage* got by our *neighbours* in *Staffordshire* and *Worcestershire* by sowing of *clover*, can scarce prevail with any of us in *Cheshire*, or our *neighbours* in *Lancashire*, to sow an handful upon the very same sort of land? nor the vast *incomes* by *marling* land in *Lancashire* and *Cheshire*, tempt our *neighbours* of the other *counties* beforementioned, to make a little search for that great natural improver *marle*; though in some places, there is strong probability to find it, and I am sure a great deal of land very proper for it? When your obliging *token* of *papers* already printed comes to my hands, I can better tell whether a description of this grand *husbandry* of *marling* may any way serve you; in the interim, I shall give you a small touch of this sort of *husbandry*. And whereas there are these five things to be spoken of; *First*, The sorts of land proper to be hereby improved. *Secondly*, The profitableness thereof. *Thirdly*, The several sorts of *marle*, with their different goodness in *kind* and *degree*. *Fourthly*, The method used in setting the *marle* upon the ground. *Fifthly*, The manner of ordering the ground afterwards. I shall only say a little of the *first* and *second* at this time, and at better leisure send you my thoughts (after advice with our greatest *husbands*)

60 *A COLLECTION for Improvement*

husbands) about the other three, if by you desired.

For the *first* of these, besides *meadow-land*, which is either so good and rich, that it needs not, or so within the danger of hurt by water, at high-water time, that it is not worth the cost to be improved; and *woodland*, which is generally thought exceeding good for this purpose, having long rested; most of the land possessed by us here in *Cheshire*, may be ranked under three general heads (though these are capable of subdivisions) viz. *sandy land*, *mossy land*, and *clay land*. The *first* is accounted the best for *marling*, the *second* pretty good, and the *third* very bad, according to these old bald verses;

*He that marles sand, may buy land.
He that marles moss, shall suffer no loss.
But he that marles clay, flings all away.*

But these general rules are not so universally true as to hold without exceptions; for though the browner sort of *sandy land*, whether plain, or mixed with pebbles, slates, or gravel; or whether it naturally produces gorse, broom, heath, or none of these, but a short sort of hard grass, is oft found very profitable, being thick set with a strong sort of marle. The grey sand is of a far poorer sort, and not near so promising upon the like costs of husbandry, yea, far inferior to some of the mossy sort: for that kind of black land, if it be firm and unctuous, will bring very good profit (ordinarily much better than the greyish sandy) but the softer is so troublesome, both in the marling and plowing, and withal so chargeable, if the marle-pit be far distant; because of the vast quantity that it requireth to make it
any

of HUSBANDRY and TRADE. 61

any whit firm for *plowing*; and so apt to bury the best part of it in a few years, by giving way to its sinking downwards, that I dare not assure my *country friend* he shall suffer no loss by such kind of *husbandry*. And for the last sort of land wherein *clay* is predominant, though it is generally bad for this purpose, experience hath taught some of mine *acquaintance* in these two counties, that *marle* (provided it be not too much in quantity, or too *tough* or *binding* for *quality*) will alter the nature of it, and make it much apter to bear *corn*, but especially to be far better for *grazing* when it resteth.

As to the profit I dare not tell *strangers* what my *neighbours* know to be true, it hath sometimes been so extraordinary, especially when right *sand land*, duly set with a suitable sort of *marle*, hath the help of dropping years, while it is in its full vigour. For *wet summers*, which cause a general *dearth*, load this sort of land with an incredible quantity, which considered (together with the great price that it will then reach) it must needs fill the *owner's purse* plentifully, and, for all that, be a great mercy to the *country*, which could not otherwise be well supplied. I shall at present only say in general, that if the *land* and *marle* be both good, and duly suited to one another, both for *kind* and *measure*, good husbands say the charge can hardly be too much. And I know somewhat by mine own experience, having no cause to complain of some *ground* that cost me very *dear*, because of the remoteness of the *marle*, the *profit* answering all with very good *advantage*. And I could name diverse of my *acquaintance*, that have advanced themselves in the world very considerably this way; and others that by this means have supported themselves
and

62 A COLLECTION for Improvement

and their families from ruin, whose estates would otherwise have been sunk by their *prodigality*; insomuch, that I wonder that the *gentlemen* of *Staffordshire* of our intimate acquaintance, that have so much land fit (of mine own knowledge) for this purpose, should so far neglect their own *advantage*, as not to send for skilful *searchers* for *marle* out of our county, which if succeeding, would be incomparably above their *liming* for durableness; and perhaps in some places, far less costly. I am confident I saw *marle* there at a *brook* side, and little doubt, but by search of skilful persons, a good quantity might be found; but how much, how good, or how conveniently it lies, cannot be resolved without search, neither there nor here. He that will not run such a poor hazard as that, is not worthy of so much gain. But I am grown too *prolix* already, I shall only add at present, that I am,

S I R,

Your servant (though unacquainted)

Adam Martindale.

Our high living is so far from prejudicing the nation, that it enriches it.

IN Num. 5. I have endeavoured to shew that *prodigality*, or *spending* beyond estates, doth not prejudice the nation. Now, according to promise, I must say something for *pride*, *finery*, *vanity*, *shews*, *plays*, &c. *luxury*, *eating* and *drinking high*, which I think causes more wealth to the kingdom, than loss to *private estates*.

In

In answer to this I have said somewhat already in a little *treatise*, entituled, *England's great happiness* (to be sold at the printing press in Cornhill) in p. 6. under title, *A general high living*, which being but short, I will give you with additions.

‘ He that spends more than he is able to pay
 ‘ for, is either *fool*, *knave*, or in great necessity.
 ‘ But I suppose not this to be the *nation's* case;
 ‘ for if it were, we must owe more to other
 ‘ nations than they to us, though we gave them
 ‘ all we have to boot; which if you think, most
 ‘ of the merchants that have foreign factories in
 ‘ the *East* or *West-Indies*, *Africk*, *Streights*,
 ‘ *Spain*, *Portugal*, *Baltick*, *East Countries*, *Hanse*
 ‘ *Towns*, *Scotland*, *Ireland*, with *France* and
 ‘ *Holland* too, will condemn you. But our
 ‘ height puts us all upon an industry, makes
 ‘ every one strive to excel his fellow, and by
 ‘ their ignorance of one another's qualities, make
 ‘ more than our *markets* will presently take off;
 ‘ witness our late fine *broad cloths*, with variety
 ‘ of dainty colours, and other *woollen manufac-*
 ‘ *tures*; our *white* and *black bone laces*, *fine silks*
 ‘ *broad* and *narrow*, *white thread* of a crown an
 ‘ ounce, and *linen cloth*, which two, with a
 ‘ little help, would increase, as *silk* hath done,
 ‘ *tapes*, *gold* and *silver lace*, with a multitude
 ‘ of other *commodities*, which puts us to a new
 ‘ industry to find a *foreign vent*, and then we
 ‘ must make more for that *market*; but still hav-
 ‘ ing some *overplus* we stretch our wits farther,
 ‘ and are never satisfied till we engross the trade
 ‘ of the universe, and something is returned in
 ‘ lieu of our exportations, which makes a far-
 ‘ ther *employment* and *improvement*.

‘ If

64 *A COLLECTION for Improvement*

‘ If it won’t do this, why do you complain
 ‘ of *France* getting our *money* for their *trifles*;
 ‘ for I believe they send us nothing they can
 ‘ sell for price enough at home, but only their
 ‘ overplus? If it will, why should we not wish
 ‘ for more of every trade, that they may in-
 ‘ crease their quantities as high as ever it is pos-
 ‘ sible? If we make six considerable laces and
 ‘ export but one for it, we may bring in more
 ‘ money than the first cost of them all, which
 ‘ is far better than to *import* one, and let our
 ‘ people sit still for want of *employment*.

Why should not we by encouraging *arts* and
sciences get money from others, as well as they
 from us? Are we the only *apes* and *fools* of the
 world? Doth not most part of it, where *civi-*
liz’d, love *finery*? I am told *France* is as eager
 for *Roman gloves*, *Venetian points*, *fine cloth* of
England, my neighbour *Grice’s hats*, our neat
white gloves, and all sorts of *scarlet dies*, as ever
 we were for the gayest trifle they thought fit to
 employ themselves about.

‘ The *Venetian*, *Spaniard*, *Portuguese*, *Dutch*
 ‘ and *English*, have drove the great *trade* of the
 ‘ world, and fetch’d the *gold* and *silver*; but
 ‘ when they had done they eagerly carried it to
 ‘ *France* to buy their *gugaws*, and thereby made
 ‘ them always considerable; and I had rather
 ‘ get a thousand pounds by lace and fringes,
 ‘ than nine hundred by the best broad cloth that
 ‘ ever I yet saw; not that I slight *broad cloth*,
 ‘ I would it were increas’d an hundred fold;
 ‘ but I think a fan is as necessary to cool one
 ‘ when extreme hot, as cloth to warm in the
 ‘ same degree of coldness: and if cloth of five
 ‘ shillings the yard will last as long, keep me
 ‘ as warm, and satisfy all my necessities as well

of HUSBANDRY and TRADE. 65

‘ as that of twenty shillings the yard will, then
‘ the other fifteen shillings, in my judgment, is
‘ as great a trifle, as to have one’s *breeches* hung
‘ with points, or one’s *ears* kept warm with a
‘ pair of pendants, for it is fashion alone that
‘ makes them all useful.

‘ That honest way that finds most employ-
‘ ment, and gets most money, is surely the best
‘ for any *nation*; and this fine *manufacture* join-
‘ ed to our great shipping, will increase it by
‘ greater bulks, and in all likelihood make us
‘ the most potent the *sun* shines on.

‘ Take away all our super-necessary trades,
‘ and we shall have no more than *tankard bear-*
‘ *ers* and *ploughmen*; and our city of *London*
‘ will in a short time be like a few *Irish huts*,
‘ or *Carthage* (mentioned) in *Virgil Traverste*.
‘ For in *England*, and colder countries too, they
‘ have gone, and some do go naked; and were
‘ it not for custom, the back as well as breast
‘ might do so now; and corn and water, with
‘ the other natural products of the earth, would
‘ be such cates, that a great many poor souls
‘ would lick their chaps at.

Although *finery* be *foolery*, yet for people to
get honest livelihoods is one of the great *con-*
cerns of *mankind*. We employ in *woollen manu-*
factures, and other we call *substantials*, as many
people as we can; surely it is better to employ
the rest in *pride*, *vanity*, and *luxury* abovesaid,
than to have them like idle *drones* prey upon the
industrious.

I do not here encourage *sin*; it was none for
princes courts to have costly *apparel*, or *Solomon’s*
temple to have rich *ornaments*: that and *Millo*
were fine *shews*; and *entertainments*, with repre-
sentations of *men* and *things*, have been, and are

66 *A COLLECTION for Improvement*

well thought on, or else *play-houses* and the *burning of popes* must both sink, if *feasting* be criminal. *David's flaggon of wine*, and piece of *flesh* to each; the *wedding in Canaan of Galilee*, the *tory* and the *whig feasts* were all too much. If any go beyond Christianity let him look to it; but within that pale we may go far enough in these things, to treble the wealth of this kingdom.

THURSDAY, June 15. 1682. NUM. VII.

The CONTENTS.

The history of malting, or the method of making malt practised at Derby. Described for R. T. Esq; by J. F. Jan. 1682.

M*Alt* may questionless be made of all sorts of grain, though it is most commonly of *barley*, which yielding much more *bran* or *chiffels*, being ground and sifted, than any other grain, is less fit for bread corn, and of a less value in the market, and therefore chiefly selected for this purpose. *Malt* is frequently made of *oats* in the northern parts of this county, and many places of *Staffordshire*, but the *ale* or *beer* drawn from it by *brewing* is more *laxative* than that which is made of *malted barley*. I once remember that *wheat* being very cheap, my father caused a steeping of it to be *malted*; and the tradition is, that it yields more liquor and stronger, the quantity used considered, than *malt* made of any other grain; and that the liquor called *mum*, much drank and approved of late,
is

of HUSBANDRY and TRADE. 67

is made of malted *Brunswick wheat*, with some few ingredients. I have known *pease* and *beans* malted frequently, and many *ale brewers* desire some in their malted *barley*, because they make the liquor in working bear a better *yeast*, or *barm*, as here we call it; and certainly, being mixed in a good quantity with other *malt*, they make very strong liquor, which, as I am well informed, is apt to intoxicate and heat the stomach exceedingly. I have never known any *malt* made of *rye*, perhaps because yielding very little *bran*, it is found more fit for *bread corn*, nor of that grain which we call *barley-big*, yet I hear that of late it is often malted in other places. But I have seen a very small sort of *barley*, not much bigger than the *groats* got out of large *oats*, which formerly has been bought in our markets, and converted into *malt*; it yields, as I am informed, very good liquor, but *sweet* and *loosening*; of late years I have seen none of it.

The *barley* of which we usually make our *malt* is of two sorts, either *sprat*, or *long-ear*, so called from the length of it, or *battledore-barley*, from the flatness of the *ear*. Each of these is alike good for making *malt*, though the knowing *husbandman*, in choosing *seed* for his ground, sometimes prefers the one before the other. In choosing *barley* for his use, the *maltster* looks that it be *bold*, *dry*, *sweet*, of a *fair colour*, *thin skin*, *clean faltered from hains*, and *dressed from foulness, seeds and oats*. Any one that is accustomed to it, by barely handling the corn in the sack, will easily perceive whether it be *bold*, *dry*, and well dressed or not; the colour and fashion of it will prompt to judge whether the husk be *thick* or *thin*; the sweetness is found by the smell, and he that would buy good corn,

68 *A COLLECTION for Improvement*

ought always to scent it; for some will appear fair enough to the eye, which by the smell we may find to have received such hurt in the *mow*, as renders it unfit for *malting*: If the grain be of a dark colour, and many corns have brown ends, we judge them to have been heated in the *mow*, and they seldom *come* well in the *couch*.

Having put what quantity of *barley* we think fit into our *cisterns*, of which some are made of cast lead, others of plaister of various capacities, we cover it with water, esteeming that drawn from the brook, by reason of its fatness, much better than that from the spring. In this we let it steep, till crushing the corn, set endways betwixt our fingers, the husk will rise, or shull a little from it, which now in cold weather, my *thermometer* standing at $1\frac{1}{2}$ or 15, will be after three days and four nights, if the *barley* be good and sound; then we draw off the water, and let it lye six, eight, ten, or twelve hours, according as occasion is, to drain.

Now *barley* bought about *Michaelmas*, when it comes first into the market, takes much less time in the water than afterwards, when it has had the sweat in the *mow*. I sup-

*We use to mow
all our barley.*

pose, because the pores of its *skin* and *kernel* are more open, and which some people wonder at after a dry year, when it has little rain in the *field*, and none in the *sweath*, it imbibes the water faster, and is sooner steeped, than when it hath plenty of rain in the growth, and some after it is cut, before it be inned into the *barn*; as about three years ago, when *barley* was every where with us got very dry, it took but two days and two nights, or two and three, as the *malster* speaks; when now
in

in the same weather it will require above twenty four hours more time in the water.

Most experienced *malsters* judge it fit to give the barley something too little, rather than too much water, because having imbibed too much, many corns will *smilt*, or have their *pulp* turned into a substance like thick *cream*, which crushes out in stirring; others will have the *spirit* drowned, and most of those which come without extraordinary pains, will send forth their substance in an *acrospire*.

I durst adventure to give some probable reasons for all these accidents; but I have heard that Dr. *Willis* has touched them in his treatise *De Fermentatione*, to which, and your own conjecture, I had rather refer you, than prepossess you with my poor *philosophy*. The *barley* being thus steeped enough, and the water well drained off, we throw it out upon the *couch floor*; if the weather be moderately warm, we immediately *couch* it about a foot thick; but if we perceive it hath taken much water, or a hotter season require it, we spread it on the *plaster floor* much thinner; yet if the weather be moderately cold, we let it lye twelve hours on a heap, the edges being only swept close up; after which, or a longer time in a *frost*, we spread it in such a thickness, as the weather and water it seems to have taken, may require.

Thus laid, it is stirred with the broad *casting shovel*, usually thrice a day in moderate weather, but in cold only twice; and in hard *frost*, when the outsides of the *couch* are apt to freeze (for the middle never will) I have known them *couch'd* up a yard thick, covered with an *hair cloth*, and stirred only once a day, the *malster* being always careful to throw the frozen outsides into the

middle, till the corn begins to *fork* and *warm* in the *couch*; after which time, if it be not laid too thin, it will not easily freeze. I know an old *malster*, whose custom it was in moderate weather always to cast his *barley* thin as soon as it was thrown out of the *cistern*, and never stir it after, but with the spade-like *running-shovel*; but his practice being only convenient for himself, I know not any that approve or follow it.

Sometimes in the hot months of *May*, *June*, &c. I have known our *malster* stir his *barley couches* (for so we call them, till the *sprit* begins to *fork*) five or six times a day, or more; it being always his care to keep them from drying too much on the outsides, lest they again be parched into *barley*. But all his care in summer is sometimes too little, for the heat will so dry the *barley*, that though it seem to come well, yet wanting moisture to put an *acrospire* back, *malt* proves but harsh and hard; of this more hereafter.

The *barley*, after it has been *couched* four or five days, in such cold weather as we now have (my *thermometer* standing at $1\frac{1}{2}$) will sweat a little, and begin to shew the *chit* or *sprit* at the *root* end of the corn, and in four or five days more (during which time it continues sweating, as is easily seen by stroaking of the drier top of the *couch*) it will be come long enough; but now, except the weather grow colder, it must still be laid thinner, and stirred three times a day, or four, when the *come* is long enough, at least; in *summer* I have known it *chit* within twenty four hours after it had been thrown forth of the *cistern*, and within three days come enough, the *malster* being forced to stir it six, seven,

seven, or eight times a day, to keep it from running out, or the *sprit* from coming too long. Sometimes I have known the *chit* to peep before the *cistern* was emptied in the hot weather of *summer*; but this was only at the top of the *cistern*, and in such a case it is the chief art of the *malster* to make the *barley come* even in the *couch*. We likewise find it to be a laborious time to the *malster* when *barley* begins to grow in the fields in the *spring time*, for that in the *couch*, by some kind of *sympathy*, will be so active, that it will require much extraordinary stirring to keep it from *coming* too long, or emptying the *pulp* of the corn in *sprits*, which it is his care to prevent, not only lest it shrink the corn in measure, which it will do something, but also lest it leave him only the husk of the corn instead of *malt*.

When the *malt* is *come* enough we throw it thinner on the floor to wither it, and stir it once or twice that day extraordinary. When it is once stop'd, with ordinary care and stirring it will be kept from *coming*: the corn is usually come enough when the *sprits* are about half an inch long; but in *summer* we let it *come* a little longer than in *winter*, to make the *malt* rash: if it be *come* too much it will look rugged, and be apt to stick together, and when stirred it will fall uneven, or on heaps; then being staid from *coming* we remove it into our upper floors, where we keep it, with stirring in hot weather three, four, and sometimes five times a day to wither it, as necessity requires, and that either with the *casting* or *running shovel*, as it is convenient for our rooms; but in such cold weather as we have now, only twice a day is sufficient.

72 *A COLLECTION for Improvement*

One thing I must not omit, since many *maltsters* are ignorant of it; when the *sprits* come forth at the root end of the corn, another *sprit*, which we call the *acrospire* begins to stir at the same end, and as the exterior *sprits* run fast out, it moves slowly backward under the skin unseen, and when they are come long enough, it is seldom gone farther back than the middle of the corn; to which if it reach not, the part of the corn which it passeth not will remain *unmalted*, the rest will be perfect *malt*. But if for want of stirring the *malt*, or giving the *barley* too much water in the cistern, both which cause it, the *acrospire* come out, it carries forth with it the heart of the corn, and leaves little but *husk*, especially if it get length, as was before intimated.

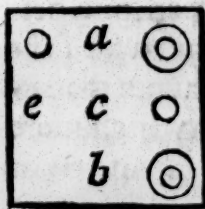
After the *malt* has lain on the *withering floors* about twelve or fourteen days it will be fit for the *kill*, or sooner, if it begin to *acrospire*, yet in sharp frost it will scarce be ready in three weeks.

In *summer* time and hot weather, the corns that are bruised by the *maltsters* feet or shovel in stirring will be apt to mould, and the *malt*, if kept but a little too thick, or omitted when it ought to be stirred, will *acrospire*; and if to prevent the *acrospiring* it be thrown thin, many corns will parch and dry into *barley* again. Moreover in those that *come*, the *acrospire* will scarce run back to the middle of the corn, so that one half of it will be left *barley*, which is the cause why *summer* made *malt* brews ill, and is disliked by most of our *ale-brewers*. The *malt* made in the hot weather of *summer*, will not abide to lye above seven days on the floor after it is *come* enough, before it be conveyed to the *kill*,

kill; by reason it is apt to contract *mould*, which has a bitter taste, and gives *drink* an ill relish; but when the weather is cool in *summer*, as good *malt* may be made as after *Michaelmas*.

The *malt* is laid on the *kill* to dry, something thicker than it lay on the *withering floor*, where when it has lain some five hours, with constant fire under it, the *malster* gives it the first turn, about four hours after the second, and some three hours after that the third; and if the *kill* dry well in three hours more, with a moderate fire (for fear of *fire-fanging*) it will be dried enough. Thus it lies about fifteen hours on the *kill*, sometimes more, and sometimes less, according to the goodness of the *kill*, and greenness of the *malt*; which if it be not well withered before it be laid on the *kill*, will require a longer time to dry, and one turn on the *kill* extraordinary. But the *brick-kill* which I shall presently describe, will dry a greater quantity in four, than we usually lay on one of the same capacity, and the common make in twelve hours. The ways of turning the *malt* on the *kill* are various; the best esteemed, but most troublesome, is thus.

Our *kills* being all of them four square, we begin at any side, and with the broad shovel cast up all the green *malt* on it into two heaps in the opposite corners, the driest next the

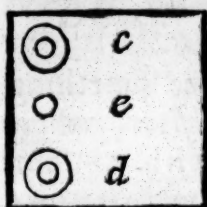


hair cloth into the middle space betwixt them; as if we began at the side *e*, in the upper figure, we throw all the green *malt* into two heaps in the opposite corners *a* and *b*, but the little dry

next the *hair cloth* betwixt them to *c*; then having shaken up the *hair cloth*, so that no loose corns may stick to it, and again laid it down
very

74 A COLLECTION for Improvement

very strait, we remove the green heaps to the opposite corners *d c* in the under figure, but



the little middle heap, with the dry under the other two, the shakings of the cloth after they are removed to the space betwixt them *e*, then again composing the *hair cloth*, we first

cast down the two green heaps all over it of an even thickness, and then the dry heap all over them; thus the greenest is turned to the bottom, and the dry lies on the top: afterwards the *malster* rakes it all over with a *wooden rake*, to leave it every where of as even a thickness as possibly he can.

But the most usual, though not so much approved way, is this. The *malster* throws all the *malt* on the *kill* on one close heap in the middle of it, then shakes up his *hair cloth*, which being laid down again very even, he casts the said heap abroad again round the *kill*, clearing the *hair cloth* all that breadth where it lay, or something wider, which place he sweeps clean with a *beezom*, lest any corns sticking to it should be *fire-fanged*; then he fills up the said swept place with *malt*, cast into it round from the sides, and raking it very even leaves it.

I have formerly described to you the fabrick of our *kills* now used, but having seen one better contrived all of brick, and promised you the description of it, I shall here endeavour to acquit my self of that obligation. Of which more in the next.

THURSDAY

THURSDAY, July 20. 1682. NUM. VIII.

The CONTENTS.

A description of the malt-kill (by the ingenious I. F.) promised in our last. Observations from a very ingenious vertuoso (as I am told) concerning several matters which belong to our argument.

A description of the malt-kill (by the ingenious I. F.) promised in our last.

IN that *kill* which I saw at Nottingham, the walls were all of *brick*, not reclined as ours, but erect, being on two sides the walls of the building; it was within about five yards square each side. At the arched entrance, though I am not tall, I was forced to stoop a little; being got within, I noted seven slender *arches* besides the two walls, made all of *brick*, distant about eighteen inches, or a foot and a half from each other, all of the same form, height, and thickness: the bricks stood end-ways in the *arch*, so that each *arch* was but four inches, or a *brick* breadth thick. At their foundations they stood out almost a foot from the sides of the *kill*, which made it seem more long than broad, and each of them at about 5 foot height from the floor, had holes about 7 or 8 inches wide left in them,

76 A COLLECTION for Improvement

them, that so the heat might pass from one *arch* to another.

Exactly in the middle of the floor, or under the fourth *arch* was the fire placed, the *grates* of which lay about one yard three quarters from the *hair cloth*, or something more. Over the fire was a square *flamestone* hung in irons, fastened into the third and fifth *arches*; it was something more than a yard long, and about three quarters of a yard broad; it lay a little better than a yard distant from the *hair cloth*, and three quarters of a yard from the *grates*, and was something above two inches thick. The *grates* stood about two foot from the ground: the fire place was walled round with a set of *bricks*, but under the fire was open before, to draw the ashes out.

Above, on the *kill*, the *malt* and *hair cloth* being removed, I found eight rows of very large *bricks* lying edgeways over the spaces, and their ends resting upon the *arches*, those of one row touching the other. The length of a *brick* was near twenty two inches, the thickness about two; and the spaces betwixt each of them but a *tile* thickness, or three quarters of an inch; the breadth I could not measure, for they lay too close, but it was proportionable to the thickness and length.

These being once heated with the fire, retain the heat a long time, which causes a less expence of fuel than is usual in our best *kills*, which if the fire be not repaired in due time will quickly cool, and not hastily again be heated.

One inconvenience in our common *kills* is, that if we make but our fires a little too big, the

the *malt* will be *fire-fanged*, (i. e.) the *comes* will be burnt into a brown reddish colour, and the scorched ends of the *malt* will smell ill of fire, which is one of the worst faults of *malt*; for besides that such *malt* will yield no great quantity of liquor, that which it doth yield will be high coloured, and relish very ill. But in these new *kills* the *fire-fanging* is never feared nor known; for the *flamestone* hinders it over the fire, which falling obliquely upon the other *arches*, is so often retunded, that its great scorching force is broken e're it reach the *hair cloth* and *malt* upon it, so that it only heats the *bricks*, whose heat dries the *malt* very evenly. Farther, these *kills* will seldom need any repairs, and those which they shall require cannot be chargeable; for the greatest damage they can easily receive, will be but the breaking of a *brick* or two under the *hair cloth*, which by supply of another or two kept in readiness for the purpose, may be easily and cheaply repaired.

I have formerly informed you, that all our *floors* are made of *plaister*, and why that is more fit for making *malt* on than *floors* of *mud*, *lime* or *boards*, so that I need not here repeat my reasons.

I had almost forgot to add one thing more, which concludes the work of the *malster*. His *malt* being dried enough he removes from the *kill*, and laying it above a foot thick, treads it round three or four times, beginning at the outsides, and winding himself round till he hath trod up to the middle of the heap, and so back to the outsides again. This he calls a *course*, and in going two or three such *courses*, his *malt*, if well dried, will be trodden enough, that is, all the *come* will be rubbed off; then if the *malt* be

be to be kept long, he throws it upon a heap in the *dust*, but if it be to be sold within two or three months after, he dresses the *dust* from it, by running it through a *fan* or *frie*, that so it may take the air better in the heap, and become more mellow. When *malt* is to be used, it is best to have it ground ten or twelve days before it be brewed. I have heard of a gentleman who would have his *malt* kept ground double that time, and his water five or six days in the brewing vessels before he would use either. You are not unacquainted with the qualities of our air, how it opens bodies, and makes them fit for operations. You will easily therefore conjecture how it renders both the *malt* and the *liquor* fitter for use, than if they were taken immediately from the *mill* and *fountain*; and what was the reason of his practice I have resolved with myself not to *philosophise* here, upon this and the many occasions I had given me in writing these few pages, but to leave all to your better considerations.

I have truly described the operations of our servants on the *barley* from the *cistern* to the *garner*. If I have done amiss in any thing I fear it is in being too prolix: if you judge any thing here wanting, or not well express'd, my letters on the intimation shall supply their defect. Excuse the long delay of this, and assure your self I am ever,

Your most humble servant.

J. F.

From

From a very aged vertuoso, as I am told, concerning several matters which belong to our argument.

S I R,

I Was very glad for your own sake, and for the publick good, to see you in your *Num. 3.* assisted by Dr. *Plot*, who in his fair volume of *Oxfordshire*, hath given us the best example of the natural history of our country, that hath appeared yet in any language that I know; and I hear that his account of *Staffordshire* is in the press: I wish he could bring on that country to do in a full body for all sorts of *hortulanes*, as they do by his Majesty's example all about *London*, and in the *West*, on *Severn*, and *Wye*: then all the *northern* countries (who have *Trent*, which was ever accounted the third river of *England*, and many other fair rivers, very proper for this purpose) would follow them, and this would suddenly be a very immense value to this kingdom. Dr. *Plot* in *Num. 3. p. 32.* tells you right what would be a means to make *England*, not only the most delightful, but also the wealthiest kingdom the world is acquainted with; and you need no greater encouragement than he gives you there, *p. 34, and 35.*

Sir, As to your first *number*, where you give us abundance of enquiries concerning *husbandry*, I will name to you authors, their price, or their bulk, that have performed much more than you have enquired, viz. If you see Mr. *Evelin's Sylva and Pomona*, the third edition, *chap. 27. p. 140.* of the infirmities of *trees*, &c. you would

30 A COLLECTION for Improvement

see much more answered than your enquiries do solicit: and of this *edition* you might truly say, that it is so perfectly completed beyond the former, that it would be a most pleasant entertainment to all our ingenious nobility and gentry.

Your most difficult enquiries are answered in *Hartlib's Legacy*, *edition* the third, p. 41. Deficiency concerning waste lands, to p. 46. octavo, price two shillings. And *Hartlib's Legacy* is never to be forgotten, having done so much good in all kinds of good husbandry all over *England* in the former imperfect editions, when scarce any one durst offer for improvements, lest he should be called a *projector*, as if he came from the *fens* to borrow five shillings to purchase five thousand pounds yearly, so averse were our *English* then from all care of improvements.

This *Sylva* may cost a *mark*, and the very *introductions*, *prefaces*, and *gardeners calendar*, are lovely worth the money: I can name you twenty more that have gone far beyond your enquiries.

Great matters have been done for all points of *trade*, *manufactures*, *commerce* and *culture*, since your enquiries were printed in Mr. Oldenburgh's *Philosophical Transactions*, as Dr. Grew's *Museum*, his *Anatomy of Vegetables*, two such books as the world never saw before; *Lovel's Herbal*, Mr. Collings of *Salt*, *Fishery*, *Cookery*, &c. in octavo, price eighteen pence; if duly regarded, it may be worth to the King and this monarchy at least ten millions *sterling*, as appears by the account of Sir *Walter Raleigh*, Sir *John Burroughs*, Mr. *L'Estrange*, and Mr. *White's* old *journal*, taken at a view of the gains the *Dutch* got by invading the royal *fishery* in the *northern*

of HUSBANDRY and TRADE. 81

seas. And Mr. Evelyn's excellent *Treatise of Commerce and Navigation*, in octavo, about two shillings, shews by authentical records the great advantages of the royal fishery, both in Europe and America. And Mr. Munns *England's treasury* is of such concernment, that a great statesman pronounced of it, that if the third and nineteenth chapters had been timely regarded, the *Hollander* had never been able to have engaged in a war against *England*. The plea for the *East-India* trade, in five sheets, five pence, doth shew the mighty improvement of that trade for *England's* benefit.

Dr. Muffit's *Healths-improvement*, in quarto, two shillings, the best that ever was written in any language, for the most healthful diet, for the choice and well ordering of flesh, fish, vegetables, and all sorts of foods. Sir Hugh Platt, *All Over-good*, but especially his *JEWEL-HOUSE of Art and Nature*, in quarto, price two shillings.

There is more matter from the same hand, which will be communicated some other time.

By my friend I am desired to insert what follows, viz.

There is lately invented a more compendious way of *ploughing*, with one man and two horses, or one man and two oxen only; which will *plow* any sort of land whatsoever, as will not be performed by the common *ploughs* with less than double the number of men and cattle; which is offered to the kingdom as an infallible and unmatchable improvement, by me, *Thomas Lewellin*, at the *George* in *Cateaten street*.

THURSDAY, *October* 19. 1682. NUMB. IX.

The CONTENTS.

A defence of the act prohibiting Irish cattel, or an essay to answer all the material objections against it that could be met with.

S I R,

Many have been the debates for and against the *importation* of cattel from *Ireland*, and almost every man in *England* hath been concerned about it. The three estates in *parliament* have prepared three bills for their *prohibition*, which his Majesty hath made laws; and yet I find many to grumble and complain against it, and some of them have published their reasons: a *collection* of which, such as occur to me, here follow, which I will set down in their full strength, and answer each in their order.

And *first*, it is urged, we shall lose some shipping. This I grant; for it is a plain case, that if we were wont to employ a hundred sail of ships to bring over cattel, and now we bring none, there will be no need for those ships. But it will also be as true, that seeing we are an island, if by *prohibition* of *Irish cattel* we increase our wealth, and thereby consume more foreign goods, and send out more of our own product, it will increase navigation, according to the quantity of goods so imported and exported; a
guess

guess at which may better appear at the end of these considerations.

To the *second* reason, *viz.* The *Irish* cattel coming over young, and very cheap to the first market, made them double the price by one year's feeding, which was the greatest improvement to be made of our dry pasture land in *England*.

This I will not gainsay; and supposing it true, I cannot see where is the *English* advantage, for I humbly conceive, that when the *parliament* meet, they will not pretend that they consult for the advantage of this or that place in particular, but for the advantage of the whole in general. And the case here, is not whether the *prohibition* of *Irish* cattel be the advantage or disadvantage of dry pasture grounds, but whether it be the advantage or disadvantage of *England*? And truly for my part I do believe that the *prohibition* hath done *England* a great kindness in general: and my reasons take as follow.

I beg that it may be granted, that it is better for *England* to have an ox for nothing, than to give one shilling for it.

If so, then it will follow, that if for an ox to *Ireland*, *England* gives, besides its own product and labour, that which is (or costs) but a shilling, or that which hinders the fetching of a shilling from another place, by reason of its being carried to *Ireland*, it is a shilling loss to *England*, if the ground and labour of *England* will produce another ox without a shilling prejudice to other matters.

And I presume we may do so, because we have land that may be improved, and people that

84 A COLLECTION for Improvement

may take greater pains without prejudice to any other matters.

The reason of the *prohibition* is by the preamble of the act expressed to be the lowness of the rents of *England*, caused by the multitudes of *Irish* cattel imported into *England*, which to me is a very good reason.

For surely the greater the consumption of the products of the land, the dearer will the tenant sell his product, and by consequence the more rent may be paid.

But the breeding of our cattel at home will consume more product than if we buy them from *Ireland*; for suppose we destroy a hundred oxen a year at five years old, if we buy them from *Ireland*, we never need keep more than a hundred at a time, because we may buy them at the beginning of the year, and destroy them at the latter end; but if we yearly destroy a hundred *English* oxen at five years, we must necessarily keep five hundred cattel continually, *viz.* a hundred of one, two, three, four and five years growth, or else there will want a supply; and if these five hundred *English* cattel will not consume a greater product than the one hundred *Irish* will, I must confess I have mistaken the mark; but if not, then it will follow of necessity, that rents by a *prohibition* must rise.

But to this it will be objected, that notwithstanding the act of *prohibition* is in force, yet by woful experience we see that rents do still fall.

To which I answer, that I think the case of the hundred and five hundred cattel to be as clear as any demonstration in *Euclid*, but whether it be or be not it ought to be taken so, till it can be gain-said; and if not, we ought to

enquire whether something else be not the cause, and not this *prohibition*; for my part I believe it is, and one cause to be as followeth.

The late unhappy wars brought a great many well witted wealthy gentlemen to distress, which forc'd them from their sedentary to practical studies whereby they might live, so as might maintain the honour of their families, these were push'd on by the industry and indefatigable pains of Mr. *Hartlib*, and some others. And since his Majesty's most happy restoration, the whole land hath been fermented and stirred up by the profitable hints it hath received from the *Royal Society*, by which means parks have been disbarked, commons inclosed, woods turned to arable, and pasture lands improved by clover, St. foine, turnips, cole-seed, purslain, and many other good husbandries, so that the food of cattel is increas'd as fast, if not faster than the consumption; and by these means, although some particular lands may fall, I strongly persuade my self, that all together, the rent of the kingdom is far greater than ever it was. I strongly presume, that no considerate man will gainsay this, if I thought he would, I could defend it by twenty other good arguments.

I have never heard to the contrary, but that *English* lean cattel will thrive in dry pasture grounds as well as *Irish*, and if we do give dearer for them it is to our selves, and so what one loses the other gets, and where the damage is to *England*, I cannot see.

To the *third*, viz. The trade of *hides* and *tallow*, or else of *leather*, will be beaten down in *foreign* markets by *Ireland*, if they come to kill all their cattel at home.

36 *A COLLECTION for Improvement*

In answer to this, I must confess, that although sometimes people are led by fancy, yet for the most part, especially in staple commodities, goodness and cheapness bears away the bell; and if *Ireland* have a great deal to spare of hides, tallow and leather, which they can sell at a foreign market, of equal goodness to ours, and cheaper, they may in all likelihood sell first. But as for the two first, *viz.* hides and tallow, I have not heard that we were much used to export them unmanufactured, unless a little tallow for *Guinea* to grease the blacks, and keep their skins from chopping, which, I presume, neither the company nor interlopers will go to *Ireland* on purpose for, or dry hides from the *West-Indies* to *France*, which I presume is not the case, and of that trade we hardly or ever had, it will be no great prejudice to beat us down in. The hides they send abroad I understand are salted; and if foreign countries knew what to do with them as well as we, methinks they should out-bid us, and buy them up, and so by gaining to themselves the manufacture, not be so earnest, and at so great cost for our leather, which I hope they will not beat us down in neither, for some very much question whether any body can tan so well as we; but if they can, and can have hides cheaper, and beef cheaper, or can live without it, upon cabbages, roots, and such like, methinks it is strange they are still so eager of our leather, both *backs* and *calve-skins*; and the shoemakers were exceedingly out when they so earnestly petitioned the *parliament* against its exportation, as if they must buy all their leathern manufacture of us (which I think was a mistake too, for they would have made some shift with worse) and likewise the *parliament* it
self,

self, when at one time they prepared a bill, and got the royal assent for a total prohibition of its exportation, and at another time for duties and restraints upon it.

But suppose all I have said to this point were nothing, if the *French*, *Dutch*, or others wanted hides, tallow, or leather, would they not go for them where they could have them cheapest? And was it ever known in late ages that *England* could sell them as cheap as *Ireland*? If they could, I dare say it was because the *Irish* were fain to sell them dear, because they sold their beef so cheap, viz. twelve shillings the barrel, containing two hundred and a half, which is six pence above a halfpenny the pound (as it is asserted by an eminent citizen) which I suppose may very well go for the barrel: and to think that *Ireland* could spare none, because they had here a fair market for their cattle, I believe will prove a mistake, for they killed abundance for their own use; and *Gerard Malines* in *Lex Mercatoria*, which was printed in 1622. speaks as if the *Dutch* traded there then for tallow.

I will allow that the *Irish* are well improved, but I think I shall never be persuaded, that all the improvements that they have, or shall hereafter make, have been the effect of the necessity that act put upon them.

To the *fourth*, viz. The young *Irish* cattle served for the common consumption in *England*, while their own large old fat cattle went into the barrel for foreign trade, in which *Irish* beef had in a manner no part, though by the continuance of this restraint, it will be forced upon improvement, and come to share with *England* in the beef trade abroad.

By this we may plainly see, that had it not been for this prohibition, our own great breed would quickly have dwindled, seeing we should have little use for it, but only for our foreign trade: and also, that hardly any of the *Irish* was sold for foreign trade, which puts me in mind what I was once told by Mr. *Rainsford Waterhouse*, a merchant at *Wapping*, who hath a great plantation in *Jamaica*, and keeps a great number of *whites* and *blacks*, viz. that he found it cheaper to go to *Leadenhall* market, and buy good beef there, and send it to his plantation, than to send it from *Ireland*.

Now I will consider how *Ireland* would share with us in the beef trade abroad; and I suppose it must be for the victualling of our ships, or furnishing other countries.

As for the *first*, I cannot believe that for a voyage to *Flanders*, *Holland*, *Hamburg*, or any where east of them, we should ever go to *Ireland* to victual, because it is the clean contrary way; neither should we, I think, in a voyage to *France*, *Portugal* or *Spain*; they are too short to be at the charge of going so much out of the way, and being at the charge of wages and other expence, as a delay will cause, and into the *Streights* they will hardly ever; because if for *Turkey* it is a company and they won't venture; if for other places they are ordinarily great ships (especially since wars, and the encouragement of five or ten *per cent.* for building great ships) and will not run the hazard of their loss of wind, and other expence for the profit; beside, they generally go with a convoy, and cannot; if little fish ships they must make no delay, but run with all speed to be quick at market, lest instead of gold they get dross. *Guinea*
and

and *East-India* are managed by companies, who will not permit their ships to go thither, for fear more things should go on board than they are willing should ; beside the delay, expence, and miss of convoy, which their savings, I am afraid, will hardly balance : and as for private traders, they love to be out of harms way. Our *American* plantations on the main are furnished to excess, that they overflow to the support of our islands ; and the other share which these have from *Ireland*, is encouraged by another reason, *viz.* they there procure abundance of servants, which they must have, had they there had no victuals, by which means they would kill two birds with one stone, though the act had never been heard of.

As for the victualling our neighbours, I see no reason why they should not buy from *Ireland* rather than us, notwithstanding the act ; for I can't imagine but that they might afford it cheaper than we (*viz.* a halfpenny *per* pound, as above) and we know the merchants ordinarily hunt for the like things at cheapest rates ; and it is hard to think that *Ireland* could have none to furnish them, had not this expedient been found out to teach them ; for they must needs eat some to furnish their own inhabitants, and if for them, they could as easily furnish others, and at this rate they must still have served *Holland*, the *French* King's army at *Dunkirk*, with *Tangier*, *Canaries*, and perhaps some other places.

To the *fifth, viz.* Grounds were turned much from *breeding* in *England*, either to *feeding* or *dairy* ; and this advanced the trade of *English* butter, which will extremely be beaten down when *Ireland* turns to it too (and in the way of
English

90 A COLLECTION for Improvement

English housewifery, as it hath done a great deal since the restraint upon *cattel*.

That grounds did improve in *England* before the *prohibition* I can easily grant, and so might be made much fitter for *feeding* or *dairy*, but that they have improved much more since, I think will hardly be denied; witness the great *inclosures* in sundry parts, the great increase of *clover*, and *St. foine*, with *turnips*, *tares*, *carrots*, *coleworts*, and several other good husbandries; and if what I said above in p. 82. be true about the one hundred and five hundred *cattel*, then it must needs encrease since. If our great *cheese-mongers* be closely consulted with, they will tell us indeed that the price of *butter* and *cheese* is fallen, and little to be got, as is said of almost every thing else; but they will not tell you but that we produce a greater quantity: and we see the goods of all the world fall as well as our *butter* and *cheese*, and so not to be imputed wholly to *Ireland*, and to all those places where it is not our interest to carry *Irish beef*, it will be no more our interest to carry their *butter*, *cheese* or *candles*.

I have shewn already (in p. 46. of these papers) that the increase of *goods* and *traders* in one place may rather improve than spoil another; to which I will add some *queries*. Has the increase of the *importation* of *wine* at *London* lessened it in other *ports*? Has the increase of *ale* at *London* lessened it at *Margate*, *Hull*, *Stockton*, *Darby*, or several other places? or the increase of *malt* in *Hartfordshire* lessened it in other countries? Has the increase of ships at *London* lessened them in the out-ports, or of *England* lessened them of *France*? If these be answered in the *negative*, as I persuade my self they may, then if the world consumes

sumes more other goods than they were wont, why they may not consume more *butter, cheese and beef*, I know not.

If *England* would improve to its height all its lands, it is probable we might afford things as cheap as our neighbours (although if *corn* was sold for twelve shillings the *buskel*, and *beef* six pence the pound, by means of an encouragement for their exportation, or double consumption, I should not be sorry, and some other time I may give my reasons for it) and to attain that, I think prohibition an excellent means.

As to the *English* housewifery in *Ireland*, I believe it improves them, but I fear no hurt to our selves, for the reasons abovesaid, and it will be hard to think that this act was the only cause of it; for if they had none before, yet it cannot be thought that the *English* farmers or housewives, who through poverty, or any other cause have gone there, should forsake the good *English* way that they were thoroughly vers'd in, to take up the *Irish* ill custom that was stark nought, and if not, they might grow too hard for us, as well as now.

To the *sixth*, viz. Whereas *Ireland* had before very little trade but with *England*, and with the money for their cattel bought all the commodities there which they wanted. By this restraint they are forced to seek a foreign market, and where they sell, they will be sure to buy too; and all the foreign merchandize which they had before from *Bristol, Chester, and London*, they will have in time from *Roan, Amsterdam, Lisbon, and the Streights*.

I think I have sufficiently shewn already in *Num. 4.* of these papers, that *Ireland's* thriving can never hurt us, and that it is better for *England*

land to have *Ireland* rich and populous, than poor and thin.

That *Ireland* had before this act was thought on but a very little trade, except with *England* (although some they had, or else how came they by their *Spanish* money, the current coin of the kingdom) I can easily grant; and the advantages *England* got by it was, it was a seat of war, a nursery to breed up soldiers, a place full of tumults, rapines and rebellions, by which means it was a constant drain to the *English* blood and treasure; but since they began to trade the royal expence hath lessened, and since the act was first made the tide was turned; and beside the advantage to the *English* subjects, as in the aforesaid Num. 4. a great stream comes from thence into the royal coffers; and how much greater it may be in a few years I cannot certainly say, but I verily believe it may be doubled.

As for laying out the money they took of us with us again (if they traded with no body else, or carried none home) it is undoubtedly true; but I strongly persuade my self we take more of their money now, for they were then poor, almost barbarous, and spent but little; they needed no shop manufacture, but a bill to fetch home a load of wood; they would cut two poles, which with some cross sticks and wythes they would make a cart, and with the manufacture of another wyth, tied to a jade's tail, they would briskly job it home; some relicks of this do still remain, but now they have altered their condition, they are grown rich, live high, spend luxuriously, and consume a great many times more goods than they were wont; which

which must make it almost necessarily follow, that they must spend more *lead, tin, coals*, and other commodities that only we produce; as also *East and West-India, Guinea, Turkey*, and other goods; and of these, such as we can sell cheapest, *France, Holland*, and all *Europe* must buy of us; I hope the *Irish* will do so too, or else, if they do leave *Bristol, Chester and London*, to buy at *Roan, Amsterdam, Lisbon*, and the *Streights*, they must have it at second hand, and how much hurt that will do us I shall not now reckon; but I am strongly persuaded they will never hurt us by trade, so long as our King shall keep them under his obedience.

In a paper intituled, *Reasons humbly offered to the Consideration of Parliament, for taking off the Prohibition, and giving leave to the Importation of Irish Cattel*, I find it as followeth:

The prohibition hath proved very prejudicial to his Majesty's revenue of customs, not only of cattel and other goods imported from Ireland, but other goods that used to be imported and exported thither, and paid custom inward, outward, and there.

How much his Majesty's custom was for cattel I know not; if they were not worth above eighty or ninety thousand pound, and they were all valued as great cattel, it would not amount to above ten or eleven thousand pound a year; and if it be not increas'd more in *England* since then, beside the increase in *Ireland*, I am sure I am very much misinformed.

As to the payment inward or outward, and in *Ireland*, I suppose it a mistake, for usually goods imported draw back money, when exported a gain.

The paper farther saith, *this prohibition hath greatly prejudiced all or most of all the land owners in England, with some reasons for it, which I think are already answered in the answers to the second and fourth reason.*

Thirdly, saith the paper, this prohibition is destructive to our navigation and trade; with some reasons, which are spoke to in the answer to the first, fourth and sixth reasons.

Fourthly, saith the paper, this prohibition hath made Ireland lessen their breed of great cattel, and increas'd their flocks of sheep, so that they have prodigious quantities of wool, which together with their hides and tallow, proves mischievous to England three ways.

First, By sending vast quantities of wool beyond seas unmanufactured, whereby foreigners grow rich, whilst our own poor starve for want of the work they use to have.

Secondly, By wool and hydes sent into England, where we have too much for the trade they have left us, so that our own price is beaten down, we having more than we can use: and the like for hydes and tallow.

Thirdly, They prejudice England by setting up the woollen manufactures in Ireland, and by having necessaries cheaper, they will sell cheaper, and so cause a decay of trade to hundreds of thousands of our manufactures, and consequently to land.

I do abbreviate these *reasons*, but think I honestly give the sense of them.

I see nothing to the contrary, but that *England* and *Ireland* spend as much *beef* now as ever they did; if so, then it will follow, that what *Ireland* breeds less, *England* breeds more, and where is the damage? That they increase in
sheep

sheep and grow rich I have shewn is good for us; and that *wool*, *tallow* and *bides*, which are but the materials of manufacture, should hurt a nation, I believe hath scarce been heard of.

I must confess I think the exportation of *wool* to be a great kindness to our neighbours and prejudice to our selves; but had *France*, *Flanders* and *Holland* no *Irish wool* before this act? If they had, then it is not to be imputed here, if they had not, neither is it because those foreign countries did get *wool* from *England*. *Ireland* did produce a great deal of *wool*, and if those people could get it home from *Ireland* cheaper than they could from *England*, it was very natural for them to do it, and interest won't lye. And as for their buying greater quantities, I must confess, where more is to be sold more may be bought; and it is as true, that according to sales, so are the provisions to supply the market. Now if *England* supplies it self, and stops their market for sheep hither, unless they can find a greater market some where else (which I don't hear of) what should tempt them to produce more? And 'tis a plain case that our poor in *England* are not starved for want of the work they had for foreign consumptions; for it is a question whether ever the *woollen trade* was greater in *England* than it hath been since.

As to the *second* way it is as plain by the event that this gentleman had not a true foresight, for the vast quantity of *wool* we had from *Ireland*, did not prove more than we could consume, for we wanted; nor bring down the price of our own, for we almost doubled; and as for our being clog'd with *hydes* and *tallow* as well as *wool*, they cause our manufactures to be

96 *A COLLECTION for Improvement*

cheaper, which will enable us to sell the more, which will increase manufactures, which will improve land, according to his own sentiments.

The *wool* comes from *Ireland* to us by allowance, and in short voyages, to them by stealth, and longer, why therefore we may not outdo them now as well as formerly, I see no reason.

The third way I have spoke to already in *Numb. 4.* to which I refer you, finding I shall be longer than I wish for.

This paper farther saith, *this prohibition hath put Ireland out of a capacity of trading with us, because they cannot pay but by money in specie, or bills of exchange, at 15 or 16 per cent. which is double the traders gain, which inforceth the Irish gentry to retrench a sixth of their expence, which hinders farther the consumption of the growth and manufacture of this kingdom.*

To which I answer, that *Ireland* doth, and must trade greatly with us, for the reasons cited in answer to the sixth reason, and they do pay us a great deal in *wool, hydes, tallow, yarn,* and other commodities; and for *bills of exchange*, although it is called 15 or 16 per cent. it is not really so, for they call a *Guinea* twenty three shillings, which we call twenty one shillings and six pence, by which reason, if one delivered a hundred pounds in gold there, they might not receive so much here in silver by fifteen pounds; but if they delivered one hundred *guineas* there, they might receive one hundred here, except eight; which was the consideration at that time, for the time of non-payment and hazard: but if they sold *beef* at *Dunkirk*, and received a bill payable at *Bourdeaux*, for which they received gain from their *English creditor*, and also saved the charge of returning it to
Ireland,

Ireland, the difference would appear but very small.

That 15 or 16 *per cent.* is double the traders gain in a great many cases, I can't deny, although I am sure it is not so in our trade, for we *apothecaries* get at least (when we are paid) half as much more.

I cannot gainsay the *Irish* retrenchment, and people cannot spend beyond their stocks and credit; but it is generally reported that the *Irish* rents do much improve, and how much that will tend to retrenchment I won't dispute.

The paper farther saith, *this prohibition hath undone many eminent tradesmen in London for want of sale and return to and from Ireland, of their wares out of fashion here.*

I have already shewn, that to pay at *Dunkirk* or *Bordeaux* is no great prejudice; and by reason of their dependence on our court they must take their fashions thence, and consequently a great part of their finery.

I remember in the years 1665 and 1666. most diseases turned to the *plague*, and when the *exchequer* was first shut few people failed, but imputed that for a cause; and it is very likely the *Irish* *act* might be as bad, I yield the point.

What remains of this discourse, you may expect in the next.

THURSDAY, Nov 9. 1682. NUM. X.

The CONTENTS.

A continuation of the defence of the act prohibiting Irish cattel, or an essay to answer all the material objections against it that could be met with. An account from Mrs. A. Lancashire of Manchester, shewing the manner how there they cure woodcocks, so well that a better dish is seldom met with.

The continuation of the defence of the act prohibiting Irish cattel, &c.

S I R,

IT is farther said, *this prohibition is likely to prove fatal to England in its fishery; for they lying more convenient, and having necessaries more cheap, may in time destroy the fishery of this kingdom.*

This I cannot deny, but I hope they will undo the *Dutch* too; but we have had as great advantages above the *Dutch* for some scores of years, as it is commonly said by most that write or speak of the matter, and as they say can do nothing: now if the *Irish* can do that, which it is said we cannot, and thereby furnish our King and subjects with more money and seamen,

men, I know not where is the inconvenience; surely we may still dry *herrings* at *Yarmouth*, and still catch *north-sea-cod* and *pilchards* with fresh fish for our present eating, which if we do, I will never envy the *Irish* happiness.

It is farther said, by reason of the loss of our manufactures our artists remove to Ireland, which will prove a greater disadvantage to England, than the bringing over their cattle.

I will not gainsay this; but the increase of our manufacturers and traders is our great complaint (as I have shewn in *England's Great Happiness, or a Dialogue between Content and Complaint*; sold by *Ben. Billingsby* under the *Exchange*.) And in *Num. 4.* of these tracts, I have shewn that *Ireland's* thriving is our advantage.

I think what I have already said will answer all the next paragraphs; only I will again take notice, that if the labourers pay a million a year more than they were wont, by reason they must feed on English cattle, I hope the breeders and graziers will gain it, and then the rents may be paid as well as before; and if I should say that the nation thrives more, and the manufacturers live better, and sell things cheaper, when food is rather dear than cheap: I am sure I should have a great many of my side; and I think I can give such reasons for it that none can deny, and some other time may do.

There is a letter from an *English* gentleman to *Mr. Garway*, which speaks of high disadvantages by the act; but he still speaks of breeding and feeding grounds, and so (what is remote from the point) he reckons single *England* in the plural number, and I think what I have already said will answer all. Only

100 *A COLLECTION for Improvement*

The act of it self is without example ; for no history records that any prince or state made any law to prohibit provisions from their state or kingdom.

I am not so well read in foreign history as to give an instance of the contrary ; but *England*, before this law was made, had a law almost to a prohibition ; for when it was under a certain price at the port, where imported, the foreign corn was to pay so great a custom, that it was seldom worth while to bring it in ; but when it was above that certain price, then they might bring it in at a very small charge. Now the difference between a prohibition and so high a price as would discourage, I won't contend for ; but if other nations do not prohibit, it is no argument against us ; they may not have so plentiful countries, or may be more liable to spoil by wars, or may not understand trade so well ; they have made no *act of navigation* ; it is but some that have the principle of living high, of believing that the more the inhabitants spend, the richer the country shall be. It is but in some places, where if the subject can get an estate he can call it his own ; wherefore it may be convenient for our *Canaan*, which defends and oft supplies its neighbours, to make different laws from those who might beg or starve without us.

I am now to enter the lists with my old good friend Mr. *John Collings*, who has spent the best part of his life in doing his King and country service ; one, who beside his great learning in the *mathematicks*, hath made such a collection of matters tending to trade, and push'd them on both in season and out of season, in parliaments and councils, and all other ways where he thought
it

it might do good, that few have done the like; he is also sociable and communicative; with whose papers, and in whose good company I have been often well informed, and much delighted, yet about *Irish cattel* we can't agree, and I must gainsay him.

In his plea for bringing in of *Irish cattel*, p. 2. he shews as good reason of my side as I would reasonably desire. But in p. 3. he begins against it, and quotes some articles from a report of the *Irish council of trade*, lent him by the right honourable the Lord *Brereton*, deceas'd, where in article 15. it is alledged, *that Ireland pays a yearly debt to England of about two hundred thousand pounds.*

I have been told since it is 300000 l. as in *Numb. 4.* and if it should lessen I should be fearful that I were out; but how the increase should prejudice *England* I see not.

In article 16. *That while the cattel trade was open, we received in flesh but 80000 l. per annum, but they bought goods of us to the value of 280000 l. per annum.*

I suppose besides the 60000 l. in *hydes, tallow, wool, and freight* there mentioned, they made up the rest in other goods, in money or foreign bills: if in goods, then we may keep up a trade with them for all above 80000 l. still; if in money or bills they did drive a considerable trade abroad before this *act*, or else how did they get these bills or money? if so, then this *act* is not the cause of their foreign trade, as it is generally asserted.

In article 17. it is said, *that about one third of all the imported manufactures might be made in Ireland, and that about two thirds of the remainder might be more conveniently had from foreign*

parts than out of England; and consequently it is scarce necessary at all for Ireland to receive any goods out of England; and not convenient to receive above one fourth from thence of the whole, which it needeth to import, the value whereof is under 100000 l. per annum.

To which I answer, if all the land of *England* was improved as high as I have, and hope to tell how it may be, we might be able to produce yearly twice as much *cattel* (more than we did) as ever was imported from *Ireland*. I will not deny but that one *third* of all the imported *manufactures* might be made in *Ireland*; but till they know how, have the materials, can keep others out, so that the cheapness of them may not undo the *manufacturer*, or they will support him at a publick charge, they cannot be made there: and we are very much beholding to the *Irish* for buying of us, when they can more conveniently have about two *thirds* of the remainder in foreign parts; I shall hardly give my consent for *England's* being so kind to them. And it is a *maxim* in our merchants, *that there is no friendship in buying and selling*; and consequently if wealth be necessary, it is *necessary* for *Ireland* (if they must have goods) to buy them from *England*, if they can't have them as *cheap* some other way, and *convenient* also by the same reason, let the value be what it will; and therefore Mr. Collings's conclusion will not hold, *that it is highly our interest to admit not only Irish cattel, but all their commodities, to keep them by agreement on equitable terms (after propounded) from furnishing foreigners.* And although their *hydes* were formerly wrought into *shoes*, and exported to the plantations, as also their *tallow*, yet we
may

may have as much *leather*, and the plantations neither want *shoes* nor *candles*.

The next *paragraph* about *wool* I have spoke to already.

In sum; if *Ireland* can and doth sell to foreigners *wool*, *hydes*, *tallow*, *flesh*, and *fish*, at one moiety that *England* can afford them at; and if our *lead* and *tin* decline, I wonder that this being not redressed, our commodities do not lye on our hands, and that we have a greater trade than ever we had since the world began: and the merchants in their *remonstrance* 1659. may be mistaken, if they think that always cheap *land*, cheap *labour* and cheap *provisions* should get the trade from other countries: why do not *Russia*, *Norway* and *Sweden* undo the world? What is the reason of the common *proverb*, *It is better to live where your dinner must cost a dollar, than where you may dine for a groat*? Doth not *London* outdo the country? And doth not *Barbadoes* and *Jamaica* far excel (for time and space) *Virginia*? Were I to remove from *London*, and trade on, let me go to the next dearest place, for there to be sure I shall find most money stirring.

Had this *act* never been they would have had *wool* in *Ireland*, and if they can sell it cheaper than we, it would be ship'd off. If so, although Mr. *Pointz* his calculation may be very good, it will signify no great matter to us.

To the second argument.

Though the *act* did pass, I am loth to think it was in favour to the *northern* and *western* parts; I rather think it was in favour of the arguments brought for it; if any were to blame it were them that opposed it, unless they could have

brought better *arguments*; beside, although some countries might bring more parliament men than others, might possibly make a greater interest in the *house of commons*, yet are the *lords* led by the *commons*, or have they no understanding? For my part, of both these honourable houses I must have better thoughts.

The loss of the *eastern* and *southern parts* signify nothing here, if the other get, and it is answered already; but of his present Majesty's loss, that we shall lose the dominion and fishery of the sea, let us see a little.

In article 17. before mentioned, it is said, the customs between England and Ireland in the freest trade, came to 32000 l. per annum, most of which his Majesty would lose, and also more, by the dearness of provisions for his navy.

His Majesty's customs both in England and Ireland are greater than ever, abating in England what is gone off by the ending of some acts; and although it might cost his Majesty a little dearer in English beef than it would in Irish, yet seeing his English subjects gain by it, they may easily make amends; and when they are giving, it is as easy to give 700000 l. as six; and though it be a little his Majesty's loss, the spending English cattle makes the nation no loser.

As to the loss of ships hereafter.

Mr. Collings saith, the eastern and southern parts have lost their victualling of the Dutch, and of our own merchant men, as may be plentifully proved from the searchers office at the custom-house; and it is already asserted in print, that our ships for the most part westerly or southerly bound, victual here but for six weeks, and take in the rest of their provisions in Ireland, or Irish provisions

visions in Spain, according to the contract made for the same.

What Mr. Collings affirms of his certain knowledge I dare not deny; I believe him a man of integrity; and suppose I grant he is not imposed on, will any body think that the quantity we are so hindered of selling, will counter-vail in value the quantity we should eat in *England*, if *Irish* cattel came over? for my part I can't. And I would fain know what great quantities it was the *Dutch* use to buy of us; it uses to be generally said, that the *Dutch* victual cheaper than we, and their chief diet is *fish*, *grout*, and such like; they might take a little *meat*, and but a little, for otherwise the common cry of their victualling much cheaper than we will come to nothing; so that if I could not gain this point I should gain another, over a thousand complainers against our politicks.

But I believe the same arguments I have already brought against the greatest part of our shipping going to *Ireland* to victual, will serve against a great part of the *Dutch* stopping on the *English* coast, except when by the *Isle of Wight*, or some other places, they are wind-bound, where still, as I am informed, they generally take in some fresh provisions; and the lesser quantity of *meat* the *Dutch* victual their ships withal, less reason have they to go out of their way, make stops, or lose convoy. Beside, I see the learned do not agree; for in the fourth reason mentioned before, it is said, *The young Irish cattel served for the common consumption in England, while their own large old fat cattel went into the barrel for foreign trade, in which Irish beef had in a manner no part.* But hete Mr. Collings saith directly contrary; and at his fourth argument,

argument, p. 9. saith, *The Irish with their hides, tallow, and wool, are not so much imported for our own expence, as to ship off to furnish foreign markets withal.*

I cannot gainsay, but that the *searchers office* at the *custom-house* may have an account of all the victual fairly ship'd off in the out-ports; but to have an account of it all one year, and compare it with another, is a great deal of trouble, I wish he be not impos'd on; if not, I presume there will be a great deal of difference between a year a while after the prohibition, when things in likelihood would be dear, and what will be after we shall have time to stock our selves with our own breed; and this we now plainly see, for the *Saturday* before the printing hereof was as good *flank beef* sold at mid-day for eighteen pence the stone in *Honey-lane* market by *Cheapside*, as any body would wish for; and when such *Irish beef* was sold cheaper in such circumstances, I (though I have enquired) cannot learn; and if it be no dearer at *London*, I strongly presume in several parts of *England* it may be afforded much cheaper, and it being *English* breed, and there fed, will be thought better.

The calling at *Spain* for victual may also be true; but for reasons already about *delays* and *convoys*, I think it can be the interest but of a few, and how much they will have meat cheaper there, after the *freight, customs*, and other charges are added to the first cost, than they could have it here, I cannot tell; but if much, why they might not have it there still, though the *act* were void, I can tell as little.

If what I have said to this point be thought reasonable, I need not trouble my self or you in answering his following *queries*: only I can't
but

but take notice, that the carrying *beef* from *Ireland* to *Dunkirk* made a great alteration; for as I quoted before, *beef* was at *Ireland* about a halfpeny the pound, and here Mr. Collings saith, *It was sold from 7 s. 6 d. to 13 s. and 8 d. the 104 lb.*

He speaks of *two hundred ships at a time, part English, part French, but most Dutch, taking in cheap fish, and other provisions at Wexford;* from whence he concludes *we must lose our fishery:* But how the *Irish act* is concerned here, I can't see.

His third argument is, *That so high a duty may be laid on their goods ship'd for any part but England; that we may sell equally with them, and then we must have their cattel, or in what else shall they pay us the debt before mentioned?*

I believe his advice will never be taken; and they will better pay us now in *bills of exchange* for money from other countries, in what they do sell us; or encreasing of them, they may rob the *French*, or some other country of some *manufacture*, or find out some new one to serve us.

Lastly, in his fourth argument he saith, *If we ought not for our own expence to be furnished with commodities from abroad, that we can supply our selves with at home, then ought we to have no foreign salt, iron, brass, paper, tapestry-hangings, canvas, linen, earthen-wares, madders, safflore, smalt, hard soap, tin plates, and divers other commodities of lesser moment imported, and no salt-petre from the East-Indies, nor sugar from Portugal, seeing our own plantations will afford it.*

Amen,

Amen, say I, till all our people are fully employed, if it prejudices no other way; and I know that Mr. *Collings* hath been as zealous for the making these things in *England* as most men, and some of them in this very book.

The next I meet with, and also mentioned in this book, p. 32. is some of the observations made by Sir *William Petty* upon the trade of *Irish* cattel.

1. Here it is said that 80000 l. per annum was the utmost value of the flesh from *Ireland*, and not the hundredth part of the rents of land in *England*, nor above the hundredth part of the butchers meat spent yearly in *England*.

2dly, That *Ireland* never did, nor could spare flesh to maintain a fifth more than now, that is about 1300000, of which there are about 1100000 now in *Ireland*.

3dly, Whereas *Ireland* contains three quarters as much land as *England* and *Wales*, and there be above 6000000 of people in *England*, it follows, that if *Ireland* can furnish flesh but unto 1300000, that *England* cannot with equal plenty furnish meat unto the said 6000000.

4thly, Here he reckons up the profit and loss of particular men, which I think doth not belong to our question; but he ends, That the owners even of breeding land have paid three times more in the inhancement of wages and manufactures, than they got by the raised price of their cattel.

5thly, Since this prohibition, the *Papists* in *Ireland* (who are 800000 in number) have gotten a dispensation from *Rome*, to eat flesh five days in the week, whereas formerly they did but four, in which extraordinary day of indulgence, there is

of HUSBANDRY and TRADE. 109

as much meat spent by the Papists in a year, as ever was brought into England.

The *sixth* I think doth not concern us.

The *first* I can't gainsay, only observe that 800000 multiplied by a hundred is eight millions, which makes every acre of ground in *England*, one with another, yield almost a *noble* a year, according to captain *Grant's* account of *acres*, mentioned in *p. 10.* of these papers; and if there be but 6400000 people in the kingdom, as is also calculated by the same ingenious author in his observations of the *bills of mortality*, it makes the expence of each person in *butchers* meat in a year not quite four *nobles*, which is an argument that this kingdom is not half improved, either for their own or the King's advantage. I must also observe, that if now since the prohibition we must of necessity keep five head of cattel for one, as is already said in these papers, and the *skins* and *tallow* not being reckoned by this worthy gentleman, our wealth in cattel must be mighty great, and three pence in the pound *sterling*, for all the sorts of live cattel that should be sold, would be an easy tax, and as fine a revenue for reviving the *act* (whereas five shillings a quarter was allowed for the exportation of wheat, and other prices for other corn in *English* ships) as I at present can think of.

The *second* I can't deny, this worthy gentleman hath a great deal of reason to know better than I have.

The *third* is a necessary consequence of the *second*; but we see, notwithstanding this *act*, the 6000000, or what e're the number be, have flesh plenty and cheap; and for my part, I question not, but that if all the land of *England*
and

110 A COLLECTION for Improvement

and *Wales* were improved as high as reasonably it might, we might breed and fatten three times the number we do; but whether the grounds of *Ireland* be capable of the like improvement, I won't say, although allowing five times 80000 pounds a year to be spent in flesh in *Ireland*, and that they always keep five times so many, which at twenty shillings the head, one with another, would be 2000000 of pounds, and so many head of cattel, it must necessarily follow, that *Ireland* having above 18000000 of acres, as being three quarters as much as *England* must allow, if it were put to no other use, nine acres for every head, which I believe, if it were well husbandry'd, would be more than needful.

The *fourth* about profit and loss of particulars I think is spoke to sufficiently already; and *that wages and manufactures are increased in their value threefold*, especially when services and quantities are increas'd too, is as great an argument that *England* hath thriven since this *act*, as I can wish for.

By joining the *fifth* with the *second*, I must conclude, that the *act* is now useless; for if we wanted cattel from thence they could spare none, because *Ireland* can yield no more, by reason of the 800000 *Papists* eating flesh five times a week.

* And now if all I have said will not give reason to believe that we make amends for the loss of our four hundred sail of shipping that used to fetch cattel, I must yield the cause; only this I will say, that if the eighty thousand pounds worth of cattel be reduced all to great cattel, and valued at forty shillings the head, and a ship would bring but one hundred at a time, it would employ them all but one voyage in a year; but

of HUSBANDRY and TRADE. 111

if two voyages, then two hundred sail will serve, if four, then a hundred; beside, there go a great many ships from *Whitehaven* and *Morson* with coals to *Ireland*, and other ships upon other scores. Whether those ships be fit to bring back cattel, or it is more their interest to go back light, I won't determine; but if they did bring back any, and I am positively told they did, then the number of the ships we are prejudiced in must be abated, according to their proportion.

Thus have I endeavoured to answer all the material *objections* I could meet with against the prohibition of *Irish cattel*; if my arguments shall be thought good they may quell the complaints of a great many, and be useful to several other things of the like nature, especially if cattel should be imported from any other place; but if not, I hope some generous man, whose inclinations lead him to such studies as these, will reply to my arguments (if any of them have any weight) and propose some new, and enforce such old reasons, as may cause the *act* to be repealed, and a great many other good laws to be made, whereby this nation may receive all the benefits by trade that it is capable of: for which he shall have all the respects that can reasonably be expected from him, who with all sincerity most heartily wishes the best things for his country's welfare, and is yours, &c.

An account from Mrs. A. Lancashire of Manchester, shewing the manner how there they cure woodcocks, so well that a better dish is seldom met with.

YOur *woodcocks* when they are pull'd, drawn, and well washed, truss them up, then par-boil them in conduit water, or other water that will wash, for such as will not will make them look red: let the water boil, then put into it two or three *woodcocks* at a time, and when they are just hot within, season them with *pepper* and *salt* as high as you please, but be sure to thrust in good store at the neck. You may let them lye in the seasoning a day and a night, more or less, as you have occasion, then stop them up with butter, if haste require; this you may do as soon as they be cold: you may also put a little *pepper* and *salt* in the *butter*; then put them in an *earthen pot*, with as much *butter* under and over as you think will cover them: you may put to a dozen *cocks* seven or eight pound, then tie them over a *paper* and send them to the *oven*; they will abide some two hours *baking*, or thereabout, but you must look at them often, for if they be *over baked*, they will be spoiled; you may feel when they are tender: you must also send three or four pound of *butter* to the *oven* in another *pot*, but set it not in half so long, only till it be clarified; then take your *cocks* out of your *pot*, and let all run from them that will; while they are draining put all your *butter* together, and your *cocks* being yet hot put into your *pot* as close as you can, with the *rumps* upward, then pour your *butter* into them carefully,

fully, suffering none of the *jelly* to go in with it, which will make them apt to putrify.

Unless your *pot* be very fit, and your *cocks* be put very close, less than ten or eleven pound of *butter*, as I said before, will not cover them. They will keep two months, if they be well seasoned; four ounces of *pepper* will season fourteen *cocks*, and *salt* answerable, as you think fit. The best time for them is *October*, *November*, and *December*; they are usually as good at their first coming as other things are, if the weather be cool, in *frost* is best. They will be good the beginning of *January*, if it be then frost; but after the thirteenth, that is the twentieth day from *Christmas day*, we count all *wild fowl* out of season, or at least not so good: they are in their prime in *November*.

I could have wrote this in fewer lines, but in observance to your desire, I have wrote all circumstances from first to last. My humble service, &c.

A. L.

If any other good *housewife* will send me such exact account as this of any other matter that is very useful, and not universally known, they will much oblige me, and I will strive by it to oblige the world.

I believe this method may be used for a great many other *fowl*, whereby a greater correspondence may be had between city and country, and not only *London* be feasted with these delicacies, but by reason of our winter voyages, a great trade made, and thousands of these *pots*

114 *A COLLECTION for Improvement*

be carried yearly to our *western* plantations, or any other place, can be reached to in less time

I presume that the cheapness of the *fowls* and *butter* in the country will pay for their carriage, and make them as cheap, if not cheaper, than they can be done at *London*.

THURSDAY, Dec. 14. 1682. NUM. XI.

The CONTENTS.

An account of some proposals that have not, and what in likelihood will gain us the linen manufacture ; published in hopes of success the ensuing parliament. A farther account from the ingenious Mr. Adam Martindale of Cheshire, about improving land by marle.

An account of some proposals, &c. to parliament, as above.

S I R,

MANY have been the attempts for gaining the *linen manufacture*, and as many hitherto the disappointments. Some are for obliging by *act of parliament* a certain proportion of every man's land to be sown with *flax* or *hemp*, whereby we should have (as they think) a very great plenty of such *flax* and *hemp*, and
by

by consequence a cheapness, whereby we may come so much nearer to the making of *cloth*, by how much cheaper this *flax* and *bemp* will be, than what is imported. But how this will please those whose land is not fit for it, or who think they can put it to a better use, I won't say; but most men love to do what they will with their own, and as yet it is not done.

Others are for raising stocks in all countries, for the erecting publick work-houses and engines for dispatch in several places, where the poor shall be compell'd to come and learn a trade, by which, when expert, a great many think (as things now stand) they would hardly get their bread by, and so when the publick stock was spent, they would knock off to some other trade, or follow the lazy art of begging, by which, with a freedom to walk where they list, they hope to make double wages: and this project hitherto don't take.

A third sort are for publick schools almost every where, as they do abroad in *Germany*, where children, with some good orders, shall be taught to spin, as here they are to read or knit, hoping that by an inurement of their hands to the distaff, almost from their mothers breast, they will learn to be so expert and quick, that thereby they may live most bravely: but the teachers are not yet found, and for want of faith that it shall succeed, and good markets, it is not begun; neither do our *poor* think it good for their children to work hard in their youth.

A fourth sort think the *Irish* way of giving a reward to her that yearly should make the best piece of cloth, but I do not hear of any great feats this hath done in *Ireland*, only they

116 *A COLLECTION for Improvement*

never fear to have one or two to come for the prize.

Fifthly, *Bristol* hath made a great attempt, and *Mr. Firmin* here at *London* hath done mighty things ; he hath built a work-house, bought *wheels, reels, &c.* taught the children and others *gratis* ; brings them to rules, and for their encouragement, besides better wages than the thing will bear, gives them a good part of their *manufacture* back, when wove and whited, to make them *sheets* and *shifts*, besides *money, coals, victuals*, and other good things, some of which you may see at large in his book, an account whereof you may find in *p. 29.* of these *collections*, yet for all this and a great deal more it won't do ; and I have often told him it never shall, unless he can make it profitable, which he is unlike to do with *English yarn*, so long as foreign *yarn* is so cheaply imported. I have heard him say he can buy as much of some sorts of foreign yarn for a shilling, as here he must pay for the spinning, although the *flax* ready dress'd were given him.

Highly to be praised are all these attempters, and much to be encouraged ; who can tell, but that time may make a little of every one's project useful ? Many hands make light work ; and

Gutta cavat lapidem non vi, sed sæpe cadendo.

*Drops into massy stone do make their way,
Not by great force, but by their oft assay.*

That these or some other may do I heartily wish ; and to push such a considerable design forward, be pleased to accept my sentiments.

of HUSBANDRY and TRADE. 117

I wish we may drive that nail which will go easiest, which I think will be by striving to make that sort of cloth first that may be made cheaper than it can be brought in, which I humbly conceive may be coarse *linens*; and I would have it made of foreign *yarn*, which *yarn* I would have brought in as plentifully and cheap as possible; and to make it so, I would have all the *duty* taken off, which *duty* in the book of *rates* I find thus, *viz.*

	l.	s.	d.
<i>Irish yarn</i> the pack cont. four hundred weight, at six score pound the hundred	5	00	0
<i>Raw linen yarn, Dutch or French</i> the pound	0	01	0
<i>Sail yarn</i> the pound	0	00	6
<i>Spruce or Muscovia yarn</i> the hundred weight, cont. a hundred and twelve pound	2	13	4
<i>Scotch yarn</i> the pound	0	01	0

Now one shilling in the pound of what is here set down must be paid, as you may see at large in an act Anno XII. *Caroli Secundi Regis*, entituled,

A subsidy granted to the King of tonnage and poundage, and other sums of money payable upon merchandize exported and imported. And in a paragraph of that act, whose margent saith, subsidy of poundage by English and aliens.

Which makes	s.	d.
<i>Irish yarn</i>	4	8
<i>Dutch and French</i>	5	7
<i>Sail yarn</i>	2	9
<i>Spruce or Muscovia yarn</i>	2	8
<i>Scotch yarn</i>	5	7

per cent.

I 3

Some

118 A COLLECTION for Improvement

Some fractions allowed for, which one with another is four shillings three pence *per* hundred weight, which in yarn of twelve pence the pound is almost four.

Of 10 <i>d.</i> the pound, is about	4 $\frac{1}{2}$	} <i>per cent.</i>
Of 8 <i>d.</i> the pound is	5 $\frac{1}{4}$	
Of 6 <i>d.</i> the pound is	7 $\frac{1}{2}$	

By which means, with *yarn* of twelve, ten, eight or six pence the pound, we shall be able to make *linen cloth* cheaper than we could before with the same *yarn* by so much in the hundred, as you see above; out of which, I must confess, must be abated such a proportion in the hundred, as the charge of weaving amounts to, which may be a third, fourth, fifth or sixth part, according to the coarseness, or fineness, or price of weaving; and it is possible by the encouragement it may give to other trades, as *linsey-woolsey*, *fustians*, and such like, there may sometimes be a glut of *yarn*, and it be afforded five *per cent.* cheaper from the merchant.

If you shall object,

That the reasons for our taking off a duty from yarn here, whereby we may be the better enabled to make cloth, will hold with foreigners to lay the like duty upon yarn, that we might not make cloth; and so instead of a blessing get a curse.

I answer,

If we had our *yarn* only from one place, your argument would hold; but seeing that we have it brought from *Russia*, the *Baltick*, *Hamburg*, *Holland*, *Flanders*, *France*, *Ireland* and *Scotland*, it will be no boot for any one place to lay

of HUSBANDRY and TRADE. 119

lay a duty, lest it being so much dearer there, the other places should run away with that part of their trade.

I would also have the duty upon *coarse linen* be doubled, which duty also in the book of rates I find thus, viz.

		l.	s.	d.
Canvas voc.	Dutch barras and Hessen's canvas the hundred ells cont. sixscore	3	10	0
	Packing canvas, Cuttings, and Spruce canvas, the hundred ells cont. sixscore	2	10	0
	Poledavies, the bolt cont. twenty eight ells	1	00	0
	Spruce, Elbing, or Queensborough canvas, the bolt cont. twenty eight ells	0	15	0
	Working canvas for cushions, narrow, the hundred ells, cont. sixscore	3	00	0
	Working canvas broad, the hundred ells cont. sixscore	5	00	0
Linen cloth, or	Working canvas of the broadest sort, the hundred ells cont. sixscore	6	00	0
	Drilling and packduck, the hundred ells cont. sixscore	2	00	0
	Hinderlands, Middlegood, Headlake and Muscovia linen, narrow, the hundred ells cont. sixscore.	2	13	4
	Irish cloth, the hundred ells cont. sixscore	2	00	0

Treager

Lockrams voc.	Treager, greft and narrow, or common dowlas, the piece cont. one hundred and fix ells	5	00	0
	Broad dowlas, the piece cont. an hundred and fix ells.			
	Minfters, the roll cont. 1500 ells, at fivescore to the hundred	56	13	0
	Ozenbriggs, the roll cont. 1500 ells, at fivescore to the hun- dred	60	00	0
	Soulthwich, the hundred ells cont. fixscore	04	0	0
	Polonia, Ulfters, Hanovers, Lu- beck, narrow Silefia, narrow Westphalia, narrow Harford, plain napkening, and all other narrow cloth of High Dutch land, and the East-country, white or brown, not otherwise rated, the hundred ells cont. fixscore.	04	00	0
Linen voc.	Twill and ticking of Scot- land, the hundred ells cont. fixscore.	03	00	0

All linen shall pay one full moiety over and above what is before rated; for payment of which moiety a year's time is allowed, or ten per cent. for ready money, with repayment, if exported.

All these that are fixscore ells to the hundred, one with another, with the additional moiety, pay about fix shillings and four pence the hundred ells, a little more than half-peny half-farthing the ell.

Those

of HUSBANDRY and TRADE. 121

Those reckoned by twenty eight ells one with another, and both duties, are three farthings the ell.

Those reckoned by a hundred and six ells, both duties make a little more than a penny the ell.

And those reckoned by rolls, much about the same price.

Now the present whole duty of all these sorts of linen, one with another, amount not to much more than three farthings the ell; which sum, if it were doubled, according to my proposal, it would make linen of three pence the ell, almost twenty five *per cent.* dearer; of six pence *per ell* above twelve *per cent.* and of twelve pence the ell, at least six *per cent.* dearer; which dearth upon linen, and cheapness upon yarn, enables us, without the help of accidental markets, to make this sort of cloth a great deal *per cent.* cheaper than we could before, which cheapness, I strongly persuade my self, would more than turn the *scale*. At this rate *weavers* would come from abroad, and one under work another; engines would be found for dispatch. I have seen an engine to wind eight skeins of *silk* at a time, and it may do eight score with a small labour, and *linen yarn* may be done as easily.

I speak here of coarse *linen*, to obviate an *objection* that would be made against the same argument, had it been used for fine *linen*, viz. *That double the custom upon fine would make hardly any be paid, for then it would be worth while for the merchant to steal (or as the word is) to save custom, which is all one.* But I suppose this coarse *linen*, notwithstanding its double duty, will

will be so bulky, and the profit of *running* so small, that it will not be worth while to unpack, be put to the shifts, run the hazard and charge which such folk are used to in the art of smuggling.

For that *linen* where an ell weighs a pound, the old and new duty would not amount but to about ten shillings and six pence the hundred weight, and to cloth of half the weight, double the price; but coarse *linen* is so bulky, that the charge of running it will take off a great deal of the profit; and whether the hazard of losing the whole, and of the merchants reputation be not of greater value than the rest of the profit, I will leave it to others to determine; but if it be not, I wonder all the *linen* of greater duty and less bulk be not sav'd, which it is not.

I suppose what will pay double, or the excise of them that make it here, will recompence his Majesty for the loss of his duty upon *yarn*.

If by some such means as this we should very much increase our *coarse-weavers*, some spirits would be pushing forwarder than their neighbours, and every now and then for their credit, make a fine piece; and some good *spinners* also (here being a trade) would be ambitious of having a pair of *sheets* wove by their own *lovers*, with yarn of their own spinning, and sometimes have half *English* and half foreign *yarn* mix'd together; as also spin our own *flax* and *bemp*; so that by degrees we may come to procure at home all things necessary to this *manufacture*.

This

This is the effect of my thoughts; but supposing my argument undeniable, yet one thing is still wanting, which is an *act* for putting it in execution, which for my country's good, I must beg you to desire every body, whom you shall discourse with about this affair, to further as much as they can; and I hope, if material *objections* cannot be made against it, it will find in due time some parliament man that will prefer a bill for it, till when we must have patience.

• Sir, It is probable you may think this to be more fit at a time when the parliament is just meeting, but I think it better now, because I wish that every one that hopes to be a parliament man will consider it well aforehand; which if they like they may easily revise then.

My very good friend, the industrious Mr. John Collings, hath written for *cordage, cables and canvas*, much like this, in p. 27, 28. of his book entituled, *A Plea for the bringing in of Irish Cattel, &c.* To which I recommend you.

A farther account from the ingenious Mr. Adam Martindale of Cheshire, about improving land by marle.

Worthy Sir,

• IT is now so long since I received your very obliging letter and printed papers, that together with my hearty acknowledgments of your kindness, I am engaged to return the following true (though poor) apology for not making

ing them sooner, being loth to give you the trouble of reading a letter of more thanks, or a lame account of what I formerly promised. I made use of my interest in a friend of great judgment and experience in these things (Mr. *Peter Fearnhead*) who chearfully professed his willingness to communicate his notions; but being a man of much business, it was so long before he could accommodate me, that I received not his paper till the last *Monday* in the evening. I shall not transcribe it endways, because of its length and coincidence in many things (and contradiction or disagreement in nothing) with what I formerly writ touching the kinds of land, and incredible profit that some have got by *marling*; but together with my own observations, briefly give you his sentiments concerning the three remaining things promised, *viz.*

1. The kinds of *marle* we make use of.
2. The way of furnishing our ground with it.
3. The method of *ploughing* and *sowing* it afterwards.

1. For the kinds of *marle*, we have these five sorts, and no more that I know.

1. *Cowshut-marle* (so called, as I suppose, for its resemblance in colour to *stock-doves*, or *queoca*, which the vulgar in this country call *cowshuts*) being of a brownish colour, bespangled with blue veins, and little lumps of *lime*.

2. *Stone-marle*, or *shale-marle*, being to see to nothing but perfect stones of soft grit, for colour *blue*, *red*, or mixed; but these seeming stones are in winter seasons, by driness, perfectly dissolved. Of this sort of *marle*, I have often heard it said, that it will give corn upon any land

land by its own natural fertility, so as that there needeth nothing but room to lay it on, and depth of its self to plow in : yea, I have seen land set with this sort of *marle*, and sown with *pease*, without plowing the first year, but I have had no experience of it my self, though I have store of it in my fields.

3. *Peat-marle*, or *delving-marle*, which is close, strong, and very fat or unctuous, and ordinarily digged up with *spades*, or *shovels*, and filled into the carts with short *pitchforks* made of purpose, with cuspes like *spades*.

4. *Clay marle*, resembling it in colour, and in my opinion, being of great affinity to *clay*; for the most sort of this *marle* differs little from perfect *clay*, as many have found by dear experience: and the best sort of *clay* differs little from this *marle*, as I believe, being induced thereto by the testimony of credible persons for skill and integrity, that in *Darby-town-field*, the *plough* frequently, when it goes deeper than ordinary, brings up of this sort of *marle*, which yet the people take for nothing but *fresh clay*, and in a short time it is mix'd with the *clay land*, to its great advantage. This sort of *marle* is oft mix'd with little stones, making it hard to get.

5. *Steel marle* in the bottom of some pits, which of itself is apt to break into little bodies almost cubical, like stones or *cannol*. Thus much for the first head.

Secondly, The next general head touching the way of *marling*, contains in it the following particulars, viz.

1. Something for *marle*.
1. Where it lies.

2. How

2. How far the top of it is from the surface of the earth. And

3. What thickness or depth in its self.

Clay land usually abounds with it, especially of the first and second kinds, and cannot spare it to neighbouring land, that is more proper for it than itself, which is least capable of improvement by it. Low *black land* also is frequently most stored with one, or both of the two former sorts; in these therefore the search is more easy: but *sandy land*, that needs most, usually hath the least in it; yet sometimes it hath a competent store of the third or fourth sort in, or near to it; but oftentimes it lies deep within the earth, and sometimes not so deep in itself when we come to it, as the two former sorts: for whereas they ordinarily lye within a yard of the surface of the earth, or thereabouts (more or less) and the first sort is often three or four yards thick of the clod, sometimes more (and the deeper the stronger) and the second sort five or six yards; those latter sorts (of my knowledge) are oft two yards, or two yards and a half within ground, before we come to them, especially the third sort, and sometimes prove but ebb of the clod neither. Here therefore is the greatest care to be used by the searcher, who making use of his own natural sagacity and experience, observing where it hath been formerly met with, and how the vein is like to go, digs holes, and bores with his auger, and by examining every bit full as it comes up, he is able to make a good rational judgment how deep it is both to it and through it.

2. Preparing the pit, which consists of taking away the *earth*, *gravel* or *clay*, that is upon the head of the clod of *marle*; for which purpose, labourers

labourers make use of *pixes, spades, shovels, wheelbarrows*, (and sometimes *carts*, if the pit be broad) and *shooting the pace*, that is, making a broad way of a very easy ascent and descent, which by *wood, gravel, sand*, and such like helps, is to be kept in as good a condition as is possible, for the convenience of fetching out the *marle*. The former of these works is called usually *feying the marle*; and that which is to be removed, is by a general name called *feigh*; the latter, as I stiled it, *shooting the pace*.

3. Preparing the ground (which is supposed to have rested several years (the more the better) before it be *marled*) and the ways to it, by stocking up *plants* and *bushes*, paring down *hillocks*, filling up *holes*, &c.

4. Getting out the *marle* from the pit to the field, which is to be done by *workmen* and *carts*. *First*, The *workmen* must be always four *fillers*, and so many *hoers* as will get them work enough ready for filling, which are ordinarily three, but sometimes four, five or six, especially in some kinds of *clay marle*; and in *peate marle*, instead of *hoers* there must be *diggers* (or as they are usually called) *delvers*, so many as will suffice. These sorts of *workmen* have usually 14 *d. per diem*, finding themselves all necessaries. Besides these there must be a *setter* in the *field*, whose office is to appoint where every load is to be poured down, and to assist in it: but if the *marle* is to be spread as it comes forth, they must be at least two to set and spread, their wages being about 12 *d. per diem*; but if the spreading be deferred till winter following (as heretofore was usual) one man, at 8 *d. per diem*, might suffice very well. Some sorts of *marle* require also a *carrier* of water to soften it for the workmen

mens *shovels*; and if there be *springs*, as there be too often, especially in the second sort, that need *lading* or *pumping*, that work must of necessity be done, whatsoever it cost; and in this especially lies the danger of a man's being taken much out of his aim in the computation of the charges beforehand, being very hard, if not impossible to guess what assistance he may need, and at what rates he can procure them in a strait.

2. The *carts* for their dimensions within are about four feet and ten inches long, two feet, and two or three inches wide, and fourteen inches deep, contrived with convenience to *koive* (as they call it) that is, pour out the load backward with great ease and expedition. Their ordinary sized horses will draw one of these carts well filled, but they usually have four, that (by turns) one may still rest in the *grafs* while three work. The wages formerly were twenty four shillings *per week*, when the owner of the teams finds the *grafs*, but now they have only twenty shillings *per week*: and if the master of the work finds the *grafs*, there was (and still is) eight shillings *per week* abated for that, and for the *driver*, he is ever accommodated at the charge of the owner of the team.

The number of *carts* must be proportioned to the distances that the *marle* may be carried; neither too many (to trouble one another, and increase the charge needlessly) nor too few, that the workmen in the pit stand idle. About eight or nine roods (of eight yards to the rood) is a convenient distance between *cart* and *cart*, as they are going from the pit to the heaps, and so back again. If things be well managed, four fillers will send forth three hundred loads a day fairly filled; and at that rate, in five days, a
large

large *Chefbire acre*, of eight yards to the *rood* or *pole*, which is about two and a ninth part *fla-*
tute acres, will be tolerably well set over; but
some bestow half a day's work more on it, espe-
cially if the ground be loose; for one main end
of *marling* is to make land more solid, that it
may be the less apt to wood, and fitter for *bar-*
ley. If one of these large *acres* can be *marled*
for twelve pounds, it is accounted pretty well,
and not very much amiss, if the *land* and *marle*
be good, and well suited, though it cost fifteen
pounds; yea, in some cases it may cost near
twenty pounds, and be sufficiently advantageous;
tho' that is a very great rate, being double (if not
treble) to what it costs some others, who have
the *marle* near, and are not troubled with wa-
ter, nor incommoded with accidents. Besides,
the strength or weakness of the *marle* may di-
minish or increase the cost; because if the *marle*
be considerably stronger, much less may suffice,
than of a weaker sort.

In some places of *Lancashire* they have used
(and possibly may still use) a sort of single *carts*
called *tombrells*, whereof each is drawn by one
horse: in other places, and particularly in these
parts they used double *carts*, drawn by two
horses a piece. But now we generally employ
such triple *carts* as I before described (which
by experience are found the best, both in regard
of dispatch, and contracting the number of *dri-*
vers; and by spreading the *marle* as we go on,
we can best hit it for thickness.

3. But the great business is yet behind, *viz.*
how a man must now order his *land*, so as it
may be abundantly responsible to him for all this
cost. It is our practice to sow it the first year
with *pease* or *oats* upon one furrow, then three

130 *A COLLECTION for Improvement*

years together with *barley* upon three furrows (or thrice plowing) yearly; after these years (wherein we expect our greatest profit) we use to sow it with *pease* (or *beans*, if the ground be not over dry for them) and sometimes *oats* for one year, and *barley* another, by turns; or if it grow weedy or grassy, we sometimes fallow or summer-work it: and by this means (if the ground and *marle* be both good and well suited to one another) the *husbandman* may till on for twenty or thirty years together, if not longer. But he must to this purpose have a special care for many of the first years that he plows not too deep, *viz.* not above an inch of soil, that he may neither spend his soil, nor bury his *marle*: and then he will have this advantage into the bargain, that the tillage will be easy; and if God be pleased to afford seasonable weather, that the land may be dry, when it is plowed and sown, it is still more hopeful.

Some, when the strength of *marle* is worn out by long tillage, strengthen it with a new supply; but then they ordinarily set it thin (which they call *skittering*) and their hope ought to be answerably moderate, for the great improvement is at the first.

Sir, I have also to add, whereas in number *six* of your *collections* there is a letter of mine, wherein, *inter alia*, I express my wonder, that there is so great a neglect in *Staffordshire* and *Worcestershire* in searching for *marle*, &c. as appears *p.* 56 and 59, lest any one should by mistake extend the meaning of my words beyond their true importance, I do hereby declare, that the scope of them is not to determine how much or little *land* is improved that way; nor what some few individual persons unknown to me

of HUSBANDRY and TRADE. 131

me have done by searhing (as well as their skill serves;) much less to assert, that there is no *marling* at all in those two counties (especially *Staffordshire*) for I acknowledge that in several places (particularly near *Sand* and *Heywood*, by the side of *London road*) *marle* offereth it self so fairly to the view, that some have been tempted to make a little use of it of late; and possibly more than I have yet heard of. But the plain sense is, that though there be abundance of land in those counties very proper for *marle*, and great hopes of finding *marle* enough in some places, within due compass, by skilful and diligent search, but not by every country labourer; I could never prevail with one, by all the arguments from experience and probable advantage that I could use, to make any significant search: whereas the like hopes in our county (especially such as appeared in one place by a brook side, some three miles from *Litchfield*) would have encouraged a good husband to search, as for hidden treasure.

Sir, This is all that at present I can from my own observation and experience, together with my friends assistance, accommodate you with: but if any thing farther come to mind worth your notice, you may expect it from

Your friend, and servant,

Adam Martindale.

TUESDAY, January 16. 168 $\frac{2}{3}$. NUMB. XII.

The CONTENTS.

An account of bread, from the learned John Evelyn, Esq; entituled, Panificium, or the several manners of making Bread in France; where, by universal consent, the best bread in the world is eaten. An account from the ingenious Mr. John Worlidge of Petersfield in Hampshire, of a great improvement of land by parsley. An account of a book, entituled, Corporation Credit, &c.

An account of bread from the learned John Evelyn, Esq; entituled, Panificium, &c.

TO make excellent *bread*, not only good *corn* is preferable to ill, but the goodness of the *mill, water, oven, and making* ought to be considered.

For the *corn*, the fullest and weightiest is the best: the *bread* which is made of any other grain than *wheat*, be it *rye, barley, oats, pease, or vetches* (with which the poor sort make or mingle their *bread*) is not to be accounted.

That *wheat* which grows in light, not fat ground, whose stalk is big and strong, makes ever the best *bread*.

New

of HUSBANDRY and TRADE. 133

New *corn* to be preferred for *bread*, as better in colour, crimp, and pleasant in taste; but it yields more *bran* than the old, which by often stirring, wears husky, and falls away to dust; it is not important whether it be ground in a *wind* or *water-mill*, so it be ground quick and speedily; that motion bruising the *corn* better than more languid, &c. and with less *bran*.

A *mill* newly repaired, provided there hath passed some *corn* through it before, will perform better than where the stones are worn.

Grind as much in a well-prepared *mill* at a time as may serve your family a month, because it will yield you a greater quantity of *flower*, than when otherwise it comes new from the *mill*, being careful to keep it well covered in *bins*, which preserves it both from the air and vermin. In the *summer* reserve it where it may be kept cool, as in some cellar or lower room, great heats being apt to produce the *nightingale-maggot*, which turns to a black winged insect, that feeds upon, and corrupts the *flower*.

Water is so principal an ingredient to the making of *bread*, that the goodness of that much improves it. This is very evident in *Paris*, where that *bread* which is made in imitation of that of *Gonness*, though by the same *bakers*, and with the same *corn*, never succeeds either as to the colour or goodness, equal to that which is made upon the place it self: this is wholly imputed to the excellency of the *water*.

That *water* is esteemed best which is *lightest*; or you may make a good experiment by trials with several *waters*, as that of the *river*, *fountain*, *well*, or *rain*; the relish will easily recommend you the best.

134 A COLLECTION for Improvement

Build your *oven* with the thickest sort of brick, and work it well in the joints; let the roof be low, the mouth narrow, the outside closely plaistered, the bottom or hearth, which is made of a loamy *clay*, is much to be preferred before *fire stone* or *brick tile*.

It will require a gradual heating, which better penetrates the sides than a *quick* fire, and is better dispersed; cleft billet is better than *bavin*, because of the less quantity of ashes, which ought continually to be taken away, that the embers and coals may heat the hearth well.

Household Bread.

The more the quantity of *wheat*, the better, yet it is a good sort of *bread* for servants, which is made of four parts of coarse *corn*, and one of *barley*; this is a competent proportion for one batch; searce it through the coarse *sieve*.

Of this take a bushel about ten a clock at night, and put leaven into it with some of the same *meal*.

To temper it in *winter*, make the water as hot as you can endure it with your hand; in *summer* it is sufficient to be lukewarm; and so proportionably in the *spring* and *autumn*.

The next morning early leaven the rest of your *meal*, tempering and kneading it a very long time, till it be very stiff; for though the *softer*, more *light*, or more *bulky* it appear, yet it will be less lasting; the *light bread* goes faster away than that which is wrought close.

This *paste* well kneaded, you shall turn it in the trough, laying the bottom upmost; then thrust your fist to the very bottom of the trough
in

in two or three places, then cover it well with *meal sacks* and clean *blankets*.

Having let it stand thus a while (longer in *winter* than *summer*) and that you find those holes closed, or swelled up, the rising is perfect.

Therefore now let some body be heating of the *oven* (for it is impossible one person should tend both) whilst you cut the mass in pieces; the pieces may be of sixteen pounds weight each, or somewhat more: then mould and form it into loaves, which lay on a clean table cloth, so as a fold of the linen may part and keep them from inter-touching.

Your *oven* hot (known by raking the end of a stick against its roof or hearth, if the sparkles rise plentifully) make it very clean, reserving only a few *coals* near the mouth; wipe it with a *mop* wet and wrung; then close it up a while to allay the heat and dust, which will endanger scorching; and when the fiery colour is a little abated, set in your loaves as fast and quick as possible (ranging the biggest towards the upper end) round about, and filling the middle space last of all.

He that heats the *oven* must be careful that he burn his wood in every part alike, kindling it sometimes at one side, sometimes at the other, and continually scraping away the ashes with his iron.

The *bread* put in, stop the mouth well with the plate door, and the edges of it with wet cloths, to keep in the heat; four hours time is sufficient for large *bread*, but you may draw a *loaf* to see if it be enough, which you shall know by knocking against the bottom with your knuckles; if it sound and be hard draw the rest; if

136 *A COLLECTION for Improvement*

not, let them stand a while longer; experience is soon learned; but if you leave your *bread* too long it will make it red within, and of ill relish.

Your batch drawn, place it on that side it is most baked.

Let your *bread* be cold before you lock it up, and then set it sideways, that the air may equally flow about it. In the *summer* time, your bins set in the cellar will preserve your *bread* from mouldiness, better than elsewhere.

Those loaves which are least baked, and worst made, should be first eaten, for the most baked relent with standing.

It is a profitable oeconomy to have ever a batch of stale *bread* when you go to make new.

The sorts of French Bread.

Pain Bourgeois, or City Bread.

Take the sixth part of what you intend to make, and put *leaven* into it, making a hole in the *dough*, as you were directed; when the mass is risen, cover it with as much more flower as what there was at first, and leave it to rise again; this ready, add to it the residue of the flower, tempering it with water, kneading and allowing it time to rise in every particular, governing the rest, as hath already been described.

N O T E.

1. The best *wheat flower* makes the best *bread*.

of HUSBANDRY and TRADE. 137

2. The newer also the *bread* is, the better.
3. The whiter the *flower*, the less goodness in taste.
4. The closer it is wrought, so it be not heavy, the more hearty and nourishing.

Some make bread (as about *Rouen* in *Normandy*) without at all sifting the *bran*, as it comes from the *mill*; this at first eating seems to be rough and harsh, but by custom it is both pleasant, wholesome, and very strengthening.

Pain de Gonneffe.

The best Bread of France.

There is of this both white and brown, and of all sizes: take six bushels of *flower*, or what lesser quantity you please, which put *leaven* to a sixth part at eight a clock at night, then add as much *flower* to it; this is called *refreshing the leaven*. The next morning early make your *dough* with the remainder of the *meal*, but temper it moderately, or very little: then turn the *dough*, and put it in a *wooden bowl*; sprinkle it with *flower* to keep it from sticking, and when it is ready to set in the *oven*, you shall turn it into another *bowl*, that when it is set into the *oven* with the *peel*, the right side may stand upmost.

The small light *bread* is made by taking the sixth part of the *meal*, and instead of the *leaven*, set it to rise with new *yeast*, and when it is swelled sufficiently, wet it again, or work it with another sixth part of the *meal*, and so let it rise for a second time; then temper it a very little,
turn

turn it, and lay the *loaves* on a cloth, with folds (as hath been directed) to keep them from touching, and so bake them.

Pain a la Mountrau.

Take a bushel of the whitest *meal*, a fourth part to ferment, with half a pint of new *yeast* (if it be stale, less will serve) a small handful of *salt* dissolved in warm water, and three quarts of milk; an hour after add the rest of the *flower*, which you shall temper but slightly; then turn the *paste*, and let it rise in small *wooden dishes*, then set it into the *oven*; an hour is sufficient: when drawn, let them cool edgeways.

Of this sort of *bread*, and that of *gonnesse*, is made *bisquets*, cutting it in halves, and taking out the crumb, and so set into the *oven*; but first it must be sprinkled with *aqua vitæ*: some add to it *fennel seed*, beaten and scattered into the *dough*, and *aqua vitæ*, as you temper it. This is an excellent *bisquet* to be sop'd in *Muscadel wine*, *Canary*, or what *wine* you please.

Pain d'Esprit.

This is made of the finest *flower*, and tempered like the

Pain de Chapitre.

Which is made in the same manner with the *pain bourgeois*, which we have already described; only it must be very close kneaded, and wrought a good while; there are some *bakers* who put this *dough* under the *kneader*. Of this *paste* are made the high *coped loaves*, and some that are
cut

of HUSBANDRY and TRADE. 139

cut in halves, and other forms: but it is only for the very meaner sort.

Pain de Gentilly.

This is made like *pain ala mountrau*, excepting only the adding a little *sweet butter* to it.

Pain de Citroville.

Parboil the pulpy part of a *pompion*, as you would do it to fry, then strain it through a coarse cloth from the strings; then add of the water it boiled in, as much as is requisite to temper the *dough*, which you are to order in all other respects, as in the former receipts, with two *leavens*. It is an excellent sort of *bread*, especially for such as desire cooling, being good to loosen the *belly*: it is somewhat of a yellower colour than other *bread*, and a little fatter.

Pain Benit O Brioche.

Take a bushel of the finest *wheat flower*, of which mix a quarter with *leaven*, *yeast*, and *hot water*; let this rise in a *tray* or *bowl*, first warmed, and well covered, if it be in *winter*: whilst this is set to rise, take the three other parts of your *flower*, and temper them with water as hot as your hand can suffer, and put in a quarter of a pound of *salt*, a pound of *fresh butter*, and a new *fresh curd cheese*; two hours after, mix these with the *leavened dough*, and work them together; then lay it together to rise again in the *tray*, knead it again on a *table*, spreading and working it exceedingly; then make it up upon a large *peel*, and let it stand a while: when
it

140 *A COLLECTION for Improvement*

it is ready to set into the *oven* (but first varnish it over with an *egg*) stop and govern the heat as for other *bread*.

When the batch is ready to draw, set it on a *peel* or *wicker-burdle*, to keep it from breaking, because it is exceeding brittle.

The *varnish* is made with the *yolk* of *fresh* eggs, beaten without water; some to spare cost add *honey*, but that obliges you to slacken the *oven*.

Pain de Cousin.

This is an excellent sort; you must of a bushel of flower take but half a peck for the *leaven*, and the rest of the *paste*; temper it with three pound of *butter*, two *fresh* curd *cheeses*, and a dozen of *fresh* eggs; if the *paste* be too stiff, correct it with *milk*, but make your *leaven* at twice, and work as before.

If you will proceed with exactness in these *receipts*, till you have the address, make several trials; that is, put a piece at first into an *oven*, and if on tasting you find any thing amiss, correct it according to discretion.

1. *N O T E.*

That all *stale bread* set a new into the *oven* will much recover it, and if it be eaten immediately, little different from what is new made; but if kept, and set in a third time, it will not be tolerable.

2. *N O T E.*

The *ferment* of *cherry wine* makes an excellent *yeast* for *bread*.

Some

of HUSBANDRY and TRADE. 141

Some good *English* housewives may be consulted for the best of *English breads, bisquets* and *cakes*: and it were to be desired, that we had a perfect description of Dr. *Kepler's* new oven, *stationary* and *portative*; which both my Lord *Brereton* and Mr. *Boyle* have had experience of. Also,

* That we had descriptions of the best ways of brewing *beer* and *ale*.

J. Evelyn.

An account from the ingenious Mr. John Worlidge of Petersfield in Hampshire, of a great improvement of land by parley.

S I R,

ALTHOUGH the time hath been long since your great obligations were enough to have exacted from me a more ready compliance with your request, yet is my tedious, though small employment in the affairs of the world no unreasonable excuse; however, that shall no longer render me ungrateful, nor prevent me from casting in my *mite* amongst the treasures of *observations* and *experiments* that you have collected: for as the *motto* of the *society* (whereof you are a member) is, *Nullius in verba*, so that small addition I shall make to your great *Collection* shall be such, that may probably have more in it than words only: which I shall willingly contribute as my occasions will permit.

I ob-

I observe amongst the enquiries concerning *meadows*, mentioned in p. 9. of your *Collections*, you desire to be informed, *what kind of grass is best for sheep, cows, &c.* In answer to which, I only give you the relation I had from several ingenious men; that a person living near *Portsmouth*, having some lands in his hands that were very apt for *corn*, sowed several *acres* of it with *parsley seed*, which thrived exceeding well; and that he fed his *sheep* on it to his great advantage.

It is observed, that some sort of *grasses* do alter the taste of *mutton*, and that the sweetest *mutton* is that which hath been fed on the finest and sweetest *grasses*, as is experienced on the *peak* in *Derbyshire*, and on the *plains* in *Wiltshire*, *Hampshire*, &c. And on the contrary, the coarsest *mutton* is produced from the grossest *meadows*, *marshes*, &c. And *sheep* fattened on *clover*, and the like rich nourishment, are not so delicate meat as the *heath croppers*; which latter rich way of fattening *sheep*, is most advantageous to the husbandman, but doth not humour the palate of the eater so well as such beasts that can live on the driest mountains without water; for it begets too great and sudden a change in the meat. The like difference is also observed in *conies*.

Sheep fatten very well on *turnips*, which prove an excellent nourishment for them in hard *winters*, when fodder is scarce; for they will not only eat the greens, but feed on the roots in the ground, and scoup them hollow even to the very skin; the *turnip* is of a hotter nature than *clover grass*, and therefore more agreeable to those cattle.

But much more hot and drying is *parsley*, even in both, to the second degree; and were it

it thoroughly experimented, doubtless, will prove very good nourishment, and not subject those dry animals to the *rot*, nor vitiate the taste of their flesh so much as the other colder food will do.

The *rot* being a disease occasioned by the *sheep* feeding on too much cold and moist meat, and is prevented by hot and dry: as their feeding in shady places in some grounds, where the *dew* lieth long on a certain broad *grass*, naturally inclineth all *sheep* feeding there to the *rot*, and by such that have to their cost made experiment thereof, such lands are otherwise employed: when on the contrary, feeding *sheep* on *salt marshes* and *brackish grounds*, preventeth the *rot*, and the giving them *salt* with their dry meat, is esteemed a cure of that disease.

Therefore *parsley* (being of such a hot, dry, saline and anti-hydripical a nature, and as my relators assure me) so much desired by *sheep* (as I am sure it is of *conies*, much of the nature of *sheep* in respect of their feeding) may very probably be, not only a very good security against the *rot*, but may render the meat rather better tasted than any other food whatsoever.

And it is a plant very easily propagated, and the seed plentifully obtained, few plants yielding more, and that also easily separated from its stalks: the ground, the finer it is dressed, the better will the *parsley* sown therein grow and prosper, and it will continue more than one year, but how many, a careful improver will quickly discover; and of what particular uses and advantages this piece of husbandry may prove (besides the general way of feeding *sheep*) an ingenious husbandman will soon find out.

However

However (amongst others) it answers one objection against *inclosures*, viz. *That inclosing of lands will prove a decay of our flocks of sheep, and so by consequence of wool.* To which I answer, if that two or three hundred *sheep* must have five, six, or seven hundred *acres* of open down land to depasture on, according to the present use and custom: in case so much thereof be enclosed as lieth convenient for enclosure (it may be half thereof, or more) and part of such enclosed land be sown with *clover*, *turnips*, *coleseed*, *purslain*, or the like; and that ten *acres* so husbandry'd will feed as many *sheep* as one hundred *acres* thereof would before have done; the question then will be, whether the husbandman may not keep as great a flock as he did before, and have variety of pasture for them, as the season of the year requireth? And that either for *feeding*, *fatting*, or *medicinally preserving them*, as he pleaseth.

For it is not to be doubted, but that land *enclos'd* and *till'd*, yieldeth a far greater increase to the husbandman than lands *open* and *untill'd*; then in case he can propagate such vegetables that will feed and maintain his flock in his *inclosures*, surely on such *inclosures* he may maintain a far greater number of *sheep* than before he could on the *open* and *untill'd champion*, or at least as great a number, and have a fair increase of tillage over and above.

My sentiments of the great effect that this piece of *husbandry*, or the like may have as to the improvement of trade, you may receive another time, if they may be acceptable from

Your's to serve you

John Worlidge.

An

An account of a book entituled, Corporation Credit, &c. and of the Bank itself.

I Conceive it very proper to my intention of endeavouring the advance of *trade*, to give a short account of the *bank of credit* that is now establishing, which is the subject of the book : and take it, if you please, as communicated to me in a letter from my worthy friend Mr. O. S.

Sir, To perform my promise, I will now give you some account of the *bank of credit*, such as I at present can, after having made as strict enquiries into all the parts of it as possibly I could. And I must tell you, Sir, that this design is laid upon so firm and solid grounds, that if well pursued, nothing perhaps can ever prove more serviceable to all the ends of *trade*; so far as *ease*, *security*, *gain*; and the prevention of *litigious contests*, are things to be valued in commerce. The design was proposed to the city; and after many examinations, and upon mature advice, it passed with the approbation of the *Lord Mayor, Court of Aldermen, and Common-council*, as an undertaking highly conducing to the general good, and extending its influence to every particular person's private benefit. The manner is thus; he that will raise a *credit* in this *bank*, brings in a *fund* of any kind of *goods* or *wares*, which *goods* being appraised, the party immediately receives a *credit* according to the value set. A time is limited for redemption, and six pounds *per cent.* only paid for the *credit, ware-house room, salvage, book-keeping,* and all charges. This credit is as useful as money,

ney, and much more safe, easy and convenient; and is in its own nature a necessary advance to *trade*. The goods thus deposited may not exceed the time limited for redemption, without coming to a new appraisement, and paying off the *bank*; but may be sold at any time before, and shall only pay to the week they are delivered out. As to the safety of it, the constitution of the *bank* is such, that it is liable to the continual inspection of the *common-council*, or persons by them deputed; every person employed gives great security for his fidelity; and there are so many checks upon the several *offices*, that it is not possible for any fraud to be committed without an immediate discovery: for the *fund* being *goods*, and not *money*, cannot be taken away, not by day, for then the *bank* is open, and nothing can be done but in the view of the world; very hardly by night, for a strict watch will be kept, and if any thing should be, the *bank* obliges itself to satisfy the owner, and indemnifies itself by the security of the party offending. I am straitned in time, and therefore cannot enlarge upon any, but shall name some very few of the many conveniencies that will certainly attend this undertaking. It will add an equivalent to so much ready *money* to the stock of the nation, as there shall be *credit* raised; this will of necessity quicken trade, and increase expence and consumption: it will find employment for all the poor: men will be furnished at low rates to support their *credit*, manage their *trades*, and to take the advantage of the market. The very *bank* itself will be a continual *mart*, and a mighty increase of *trade* by occasions arising even within itself. A design of such general use and advantage, that hath past the test,
and

and has the countenance and concurrence of so many wise and eminent men as compose the government of this city, will surely meet with a suitable reception from all prudent and considering men. And after what I have said, *Sir*, which is all demonstrable, I doubt not but you will concur in opinion with me; that the generous and publick-spirited man, and the cautious interested person, are both equally concerned to wish well to this undertaking, which answers both their ends. The undertakers have answered all *objections* made against it; and it only remains now to perfect their subscriptions, in which it is said there is a considerable progress made. *Sir*, I am

Your most affectionate

friend and servant,

O. S.



TUESDAY, Feb. 13. 168 $\frac{2}{3}$. NUM. XIII.

The CONTENTS.

Some considerations upon the proposals approved on by the city of London, for subscriptions upon lives, wherein are some observations and conjectures upon the East-India company, and bankers.

S I R,

IN my last I gave you an account of the great undertaking to promote trade by a bank, approved on by the city of London: now I must give you an account of another great affair, carried on by the same persons, and it is printed in a large sheet by them as followeth, viz.

Proposals made and approved by the city of London, for a yearly increase of wealth, by subscriptions, to advance money at interest for lives, of whatsoever age or sex, under ten several ranks or classes; which subscriptions will produce great advantage to the survivors, as is particularly instanced in the schemes and paragraphs following, viz.

The

of HUSBANDRY and TRADE. 149

	The particular sums to be sub- scribed.	The number of persons requisite for each rank.	Total sum to be subscribed by each rank.	The yearly in- terest there- of.
1	5	2000	10000	600
2	20	1000	10000	600
3	20	500	10000	600
4	25	400	10000	600
5	50	200	10000	600
6	100	100	10000	600
7	200	50	10000	600
8	400	25	10000	600
9	500	20	10000	600
10	1000	10	10000	600

The subscribers names, quali- ties, sexes, and places of habi- tation.	1. rank of per- sons under 7.	2d. between 7. and 14.	3d. between 14. and 21.	4th. between 21. and 28.	5th. between 28. and 35.	6th. between 35. and 42.	7th. between 42. and 49.	8th. between 49. and 56.	9th. between 56. and 63.	10th. between 63. and 70.
A. B. of Cheapside, London, gold- smith, for his son John.	5									
The same for C. D. of Corn- hill, Gent.			5							
E. F. of Pater- noster row, mer- cer, for himself.							5			

By which schemes it appears there are ten thousand pounds to be subscribed on each rank or class of sums and persons, the *interest* of which comes to six hundred pounds *per annum*; but no subscriber shall be held obliged to pay his money until the said sum of ten thousand pounds be fully underwritten (that is to say) if he have subscribed five pounds, until 1999 other persons of the same rank or class (as to age) have each of them subscribed five pounds to make up the same ten thousand pounds; or if he have subscribed fifty pounds, until a hundred and ninety nine other persons of the same rank or class

150 *A COLLECTION for Improvement*

(as to age) have each of them subscribed fifty pounds.

Every person for whom a subscription shall be made, shall, from the time his money is paid, receive interest after the rate of six pounds *per cent. per annum*; and as any of those that are in the same rank die, the survivors of that rank shall receive the *interest money* that should have been paid to the deceased, equally divided amongst them (that is to say) if one of the ten subscribers for a thousand pounds each man do die, the other nine that shall survive, shall receive, besides the *interest* for their own thousand pounds (each) subscribed (which is sixty pounds *per annum*) their equal share of that sixty pounds which would have accrued to the deceased, and so of the rest.

Every subscriber, when he comes to subscribe, shall declare the age or ages of the persons for whom he doth subscribe (*viz.*) whether they be under the age of seven, or above seven, and under the age of fourteen, or above fourteen, and under the age of twenty one, or above twenty one; and so of the rest of the said ranks. And if any person under writing, either for himself, or any other, shall declare, and subscribe the person for whom such subscriptions shall be made, to be of any other age than by the rules or instances aforementioned, are allowable to pass in such rank or class as he shall underwrite for, such subscriptions, and the monies thereupon paid shall be forfeited, and go to the rest of that rank.

If any person shall underwrite the first five sums abovementioned, which amounts to but a hundred and ten pounds, and enter himself, or those for whom he underwrites, according to their
I
respective

of HUSBANDRY and TRADE. 151

respective ages, in five several ranks or classes, he hath thereby a possibility of receiving five times six hundred pounds, which is three thousand pounds *per annum* during his life, if he survive the rest. And so if any shall underwrite (in like manner) all the ten sums first abovementioned, which amounts to 2310 *l.* he hath like possibility of receiving ten times six hundred pounds *per annum* during his life, if he survive the rest.

Every person, when he comes to demand any *interest money*, must bring certificate from the *trustees* of the respective rank or class in which the subscription was made, that the person, upon whose life the *money* is demanded, was alive at the time when the *interest* by him demanded became due; but if no demand be made of any persons *interest* by the space of three years successively, such persons shall be held as dead, and his *interest* for the said three years, and until he shall afterwards appear to make demand, shall be lost to him, and divided among the rest of the subscribers; which said *trustees* shall for the first year be nominated and chosen by the major part of the subscribers in each rank respectively, as soon as the said rank or class shall be filled up, and afterwards annually.

If any person desires to transfer his *interest*, it will sell every year for more *money* than it would have done the year before; for the more persons die, the greater will the income be to the survivors; and any man may transfer his *interest* to whom he pleases.

This fund, for the security of the payment of the said *interest*, shall be settled to the satisfaction of the subscribers, as shall be advised by counsel learned in the law.

But to these proposals I hear two great *objections*.

1st. *That the subscribers shall have but common interest, and lose the principal; which is not a penny-worth for a penny.*

2^{dly}, *That people may club together, and leave to the longest liver, interest and principal; or it may be again divided among the heirs, or the heirs may come in afresh upon interest, and it may be a fund for such interest ad infinitum.*

These *objections* I will consider with all fairness imaginable; and first, of the first.

It is true the *subscribers* shall have no more but what the law calls *common interest*, viz. six *per cent*. But whether the *current interest* of the town and country is like to be such, is to be enquired into; and so much as the *interest* shall be less worth, so much will the proposals appear better; and if my foresight fails me not, within a while, *interest* will not be so much worth, my reasons take as follow.

Within these two years I went my self to the *East-India company* in behalf of a friend to offer them some *money* at three *per cent*. and though I made one of the officers my friend to entreat for me, yet it would not be accepted: and it is notorious that about that time abundance of people did lend them at that rate; the reason, I suppose, was, because they could not get more, with security to their satisfaction; nay, to others it was lent at four, four and a half, and five, currently; and although now it is risen to six, yet when the cause of its rise shall be removed, it must of necessity again fall (for it is out of the power of laws to ascertain *interest*, as is apparent by these instances; and the high rates the King and others have given, when their

extraordinary occasions have forced it, besides procuration, continuation, &c.) and the causes of its rise, according to my best observation, have been as follows.

Besides the quantities of *money* carried out by the *Turky* company, and to several other places in *Europe*, according to common custom, several interlopers for *India* provided themselves with a great quantity; the *East-India* company hoping by a very great trade to prejudice these *interlopers*, provided much more than ever they did before. These extraordinary occasions, unless the quantities were proportionably increas'd, could do no less than raise *interest* (every one raising their commodity according to the eagerness and multiplicity of good *chapmen*) but that which made it more than ordinarily break out, was, that some persons that were not pleased with Sir *John More's* government in his mayoralty, thought to prejudice him by draining *Ben. Hinton*, his intimate, a *goldsmith* and *banker* in *Lombard-street*. This was told to me about a fortnight before the first *bankers* of this late storm *viz.* Mr. *Addis* and his partners went off: and this is confirmed to me by a considerable man in this city, who tells me, the *dissenters* say, the *bank* will encourage trade too much to be countenanced at this time. When *money* was thus drawn from Mr. *Hinton*, almost every body (although it is probable the most part knew not why) thought it best to secure their own, and ran with open mouth upon all the *bankers* for *money*, thinking it better to let it lye dead a while in their *cheests*, than to run a hazard of trusting such, who, for ought they knew, might do as Mr. *Addis*, and some others near him had done; to join with this, some
dissenters

dissenters being excommunicated, and a discourse that all the rest, that would not comply, should, made, I suppose, most folk willing to have their *money* out of such hands.: also the many and rich *interlopers* that went, and were designed to go for *India*, together with all the jealousies imaginable, raised by them and their friends upon the company, made a great many of the fearful members of the company eagerly sell their stocks; and perhaps some of their designing ones too, that they might afterwards have opportunity of buying again cheaper.

This, when the company had most need of *money* to set out their numerous *fleet*, upwards of thirty *sail*, made their *creditors* run very earnestly on them also for the *money* they had lent them; which put them to such straits, that instead of three, they were very willing to give five or six *per cent.* and some say, promises of good turns into the bargain: but all would not do, their *auctions* fell from 365 to 245, and they were forced to put a stop to payments for three months; and in the mean while have appointed a sale, and expect several rich ships home, with which they question not to give a stop to all reasonable complaints.

This, all laid together, I take to be the reason why *money* is at this high rate; but if my conjectures are false, I beg pardon, and I wish some more knowing would give us the true causes: but if I am not mistaken, then it will follow, that when the *boarders* are weary of keeping up their *money*; when what was exported last year to all parts shall return with a *duck* in its mouth; when the *East-India auctions* shall again rise; when the fright shall be over, as usually in these cases it is after a little while; when we shall

of HUSBANDRY and TRADE. 155

shall come to have less disputes, and be more united about religion (all which I hope shortly to see) then you will find *money* as cheap, if not cheaper than usually, and the *East-India company* offered again more *money* than they have occasion for; and I verily believe they may, if they will, be one of the chiefest *funds* in the nation; for although they owe a great deal of *money*, yet it is visible that they have a far greater stock; and it is also plain, that it is their *interest* to keep up their *credit*, although it were by lending their own private *cash*, for otherwise they lose more by the fall of their *auctions* than all their debts come to; as lately it was said, their debts were about 800000 *l.* and their principal stock is about 750000 *l.* and every 100 *l.* fell in their *auctions*, as above, from 365 to 245, which is 120 *per cent.* amounting to 900000 *l.*

This *money*, or so much of it as will make current payment, I persuade my self they will raise by themselves and friends, unless they find some better expedient; although perhaps forbearance of a dividend or two may do the business. If so, then seeing the *bankers* are single, and their stocks not so visible, and some or other of them often drop off, what should hinder, but (this company appearing thus staunch) most folk should run their *money* in here, cheaper than other places, by one or two *per cent.* (except in the *Guinea-company*, which I take to be as safe as this) and as for danger from *interlopers* I see no great reason to fear, because the *Guinea-company*, in spite of as many *interlopers* as will go, are in a thriving condition. And this *India-company* may, with a less gain *per cent.* in many more hundreds, get more *money*, and more dishearten

hearten their adversaries : there is no necessity for a double trade, to have double fortifications, double agents or factories, neither will there need to the great ones in *India* double presents, nor all together be among themselves double petty charges. Much more I could say on this subject, but I don't think it needful here: my drift is mainly to shew, that if *money* should come again to three *per cent.* then the allowance of six will be equivalent to twelve, when interest is at six.

The second part of the first *objection* is, *that the principal will be lost.*

It is true it will be so; but who is it will find it? Why, it is the city of *London*, from whom most of the money expected to be subscribed hath been gotten; for if they are *citizens*, they give it to their own body, and for their own use; it is probable their children may be the orphans to reap the benefit of it: but suppose it should be spent in *triumphs*, *Lord-Mayors-shews*, *publick buildings*, *festivals*? Is it not such like that enables us now to live so well, and makes us the renown of the whole earth? I am strongly persuaded, that a stately *Lord-Mayor's-shew* makes *London*, from strangers that flock to see it, get more *money*, six times over, than ever the charge of the *pageantry* came to; and if they had stock to enlarge their glory, I am sure a proportionable expence will follow it. O what crouds flock'd hither to see the glory of the King's return and coronation!

But if the subscribers should not be *citizens*, yet it is likely it will turn to their childrens advantage; for *London* is the means of preferment to most of the country's progeny: and I question not, but when the city shall reap these
advan-

advantages, it will be a good argument for preferment to places, for the heirs of such subscribers.

To the second *objection*, viz. *That the people may club*, &c.

I confess, in *theory*, all this is true; but it is next to impossible, to believe that ever it should be practised; for who, without consideration of some loaves for his pains, will gather this *club* together? Or will they *more fungorum*, as *musbrooms*, all start up together in a night, to throw in their dust? But if they should, who should find out a security, search the *title*, or be counsel learned in the law, to settle and secure this *fund*? Or if paid for, will not the charge of doing these things, when taken out of these little combinations, reduce this profit to a less than what is here proposed? I doubt it will. However, till that be tried, this is the better, and every one hath liberty to please himself: I believe I shall never be of that *club*, whatever I shall be of the other, I can't yet say. If the first part of this *objection* won't take, the rest never can, as being dependants on it.

Hoping that what is here said may be some *answer* to the *objections*; or at leastwise make the prejudice of subscribing appear not altogether so great, as at first it might be thought for; I will strive now to shew what in all likelihood will be the advantages of these subscriptions.

It is told you six *per cent.* with the whole six hundred *per annum*, to be divided among the survivors, even to the last man; no body, subscribing for himself, that loses here, but he that dies; and rather than he shall want money in the next world, he, if he leads a good life here, shall have a note to St. *Peter* to turn the key
for

for nothing ; but for those that shall live long here, let us see what in likelihood shall be their profit.

Major *Graunt*, or rather that learned and ingenious virtuoso Sir *William Petty*, in his admirable observations of the *bills of mortality* of *London*, a book useful to a multitude of purposes, and a pattern for many other great designs. This great man, I say, in *p.* 14. of his second edition, saith, ‘ That about one third of all that were
‘ ever quick, die under five years old, and about
‘ thirty six *per cent.* under six.

If so, it is to be supposed, that those of the *first rank* that shall live but seven years after subscription, shall receive upwards of nine *per cent.*

But in *p.* 56. ‘ That three die yearly out of
‘ eleven families, of each eight persons, *i. e.* eighty
‘ eight ; if it were ninety, it would be one in
‘ thirty :’ and at this rate, whosoever lives thirty years in a place, may have no neighbour that was cotemporary with him in his first year. Therefore they of the said rank, may in thirty years reasonably expect almost two hundred pounds *per annum* a-piece.

In *p.* 58. he saith, Of one hundred, there dies within the first six years 36 ; the next ten

years, or <i>decad</i> ,	24.
The second <i>decad</i> ,	15.
The third,	9.
The fourth,	6.
The next,	4.
Next,	3.
Next,	2.
Next,	1.

From whence it follows, that of the said hundred conceived, there remain alive at six years end

64.

At

of HUSBANDRY and TRADE. 159

At sixteen,	40.
At twenty six,	25.
At thirty six,	16.
At forty six,	10.
At fifty six,	6.
At sixty,	3.
At seventy six,	1.
At eighty,	0.

In p. 65. he saith, *In the country about one in fifty die yearly, but in London about one in thirty; and that London is not so healthful now as heretofore.* Wherefore it may be advantageous to subscribe on country lives, rather than city ones.

If what I have already said shall appear reasonable, then it may be worth while to consider, what people in likelihood it may be fittest for.

I do suppose it very proper for all landed men to put in five pounds a-piece for their younger children; for if they die quickly, the estate will be free to the heir; if not, it will be considerable, and the estate shall not need to be clog'd for maintenance.

It will be proper for all tradesmen who live genteely from hand to mouth, but never provide much aforehand: this way their children may have portions, and themselves be well kept in their old age.

It will make all sorts of old people be made much on, because the longer they live, the more they will have.

Merchants, several other *tradesmen*, and *gamesters*, that live by hazard, may sometimes at extraordinary hits put something in here to keep, in cases of extraordinary losses.

Poor servants, as soon as they get five pounds, may by it take care for old age.

Friends

Friends may put in for their *ſhe* relations who are ill married, whereby they ſhall never want; and it will be a means for forcing kindneſs from their husbands.

It will be better for wives than jointures, and husbands may employ a great deal of the money that ſhould buy land.

If families grow ſo low that there is a neceſſity for ſelling of *jointures*, ſome of the money may be ſecured here, and the widow fare never the worſe.

If every *univerſity man*, when he comes to preferment of a hundred pounds *per annum*, would put in five pounds, and ſo for every hundred pound to have the intereſt go towards the *library* of his *college*, it would in a while make them very great: and it would do the like for *Sion-college*, if each ſuch *London* miniſter would do ſo.

And if twenty good folk would give five pounds a-piece, for ought I know, it might raiſe ſuch a *college* as Mr. *Abraham Cowley* ſpeaks on in his diſcourſe of *Agriculture, for the Improvement of Husbandry*.

Multitudes of other conveniencies I could enumerate, but they that will conſider theſe, may find enough more that will be agreeable to their own circumſtances: and there is a book ſigned by Mr. *Wagſtaff*, the city *town-clerk*, which book is entituled, *Propoſals for Increate of Wealth by Subſcriptions*, that will ſhew you divers other inſtances.

Whatever is ſaid of five pounds will ſerve for any other ſum.

Sir, If theſe reaſons ſhall be undeniable, I pray encourage this deſign; if not, perſuade
ſome

some body to shew the contrary ; but however, pardon me, who unless I do subscribe, am like no ways to be concerned in it, except in good wishes for that city, from which I have had my well being.

Farewell, &c.

TUESDAY, March 13. 168 $\frac{2}{3}$. NUM. XIV.

The CONTENTS.

A general account of the goods imported, exported, and exported by certificate, with the number of ships entred in, and cleared out, to and from the city of London, from the 29th of October 1682, to the 1st of February 168 $\frac{2}{3}$, extracted from the bills of entry. An experiment of the ingenious Mr. John Worlidge of Petersfield in Hampshire, for improving and fining of cyder.

S I R,

THAT much may be increas'd by his Majesty's subjects: that all his subjects may know what materials and quantities thereof they have to work with: that they may know the quantities consumed, and what in probability may be fit for them to keep, produce, or sell: that *statesmen* and *parliaments* may know what is fit to be increas'd, and what (if any thing) to be depress'd: that all may be tempted to make the

VOL. IV.

M

advance-

Friends may put in for their *ſhe* relations who are ill married, whereby they ſhall never want; and it will be a means for forcing kindneſs from their husbands.

It will be better for wives than jointures, and husbands may employ a great deal of the money that ſhould buy land.

If families grow ſo low that there is a neceſſity for ſelling of *jointures*, ſome of the money may be ſecured here, and the widow fare never the worſe.

If every *univerſity man*, when he comes to preferment of a hundred pounds *per annum*, would put in five pounds, and ſo for every hundred pound to have the intereſt go towards the *library* of his *college*, it would in a while make them very great: and it would do the like for *Sion-college*, if each ſuch *London* miniſter would do ſo.

And if twenty good folk would give five pounds a-piece, for ought I know, it might raiſe ſuch a *college* as Mr. *Abraham Cowley* ſpeaks on in his diſcourſe of *Agriculture, for the Improvement of Huſbandry*.

Multitudes of other conveniencies I could enumerate, but they that will conſider theſe, may find enough more that will be agreeable to their own circumſtances: and there is a book ſigned by Mr. *Wagſtaff*, the city *town-clerk*, which book is entituled, *Propoſals for Increate of Wealth by Subſcriptions*, that will ſhew you divers other inſtances.

Whatever is ſaid of five pounds will ſerve for any other ſum.

Sir, If theſe reaſons ſhall be undeniable, I pray encourage this deſign; if not, perſuade
ſome

some body to shew the contrary ; but however, pardon me, who unless I do subscribe, am like no ways to be concerned in it, except in good wishes for that city, from which I have had my well being.

Farewell, &c.

TUESDAY, *March* 13. 168 $\frac{2}{3}$. NUM. XIV.

The CONTENTS.

A general account of the goods imported, exported, and exported by certificate, with the number of ships entred in, and cleared out, to and from the city of London, from the 29th of October 1682, to the 1st of February 168 $\frac{2}{3}$, extracted from the bills of entry. An experiment of the ingenious Mr. John Worlidge of Petersfield in Hampshire, for improving and fining of cyder.

S I R,

THAT much may be increas'd by his Majesty's subjects: that all his subjects may know what materials and quantities thereof they have to work with: that they may know the quantities consumed, and what in probability may be fit for them to keep, produce, or sell: that *statesmen* and *parliaments* may know what is fit to be increas'd, and what (if any thing) to be depress'd: that all may be tempted to make the

VOL. IV.

M

advance-

advancement of trade their study, and gain to themselves (as the consequence thereof) much wealth, to his Majesty a full *exchequer*, an *invincible fleet*, and *great renown*, I give you here a monthly account of the *imports*, *exports*, and *exports by certificate*, with the number of ships entered in, and cleared out from this famous *Emporium of Great Britain*, this great city *London*.

This account I have at a great charge extracted from sheets, that are every day (*holidays excepted*) published by Mr. *Nathaniel Long*, usually called *bills of entry*; which he sends to such merchants, or others, in or near the city of *London*, as desire them, and will pay for them forty shillings *per annum*: and I do very much wonder, that all such gentlemen, who study the welfare of the *state*, or design to be *parliament men*, and have such plentiful estates, that forty shillings a year cannot be miss'd; that these, I say, should not much rather study these, than give six pounds *per annum* for *news-letters* (useful too.) Here would be divertisements for all their friends; and it is hard (besides the curiosity of knowing from whence all things come to us, and whither our goods go) if an ingenious gentleman (by knowing the names of every particular importer, and his quantity *imported*) cannot by cheap buying from the first hand, save more than the charge of these *bills* amount to; were I to live in the country, and were of a *club*, I would willingly contribute half a *crown*, or a *crown* a year, towards such a matter, although a small forfeiture of them that do not come would do the business. This, with the names of *ships*, may be had from the particular *bills*;

of HUSBANDRY and TRADE. 163

bills; but from mine you can expect no more than the general monthly quantities, and such you have as follow, viz.

London, imported from the 29th of December, 1682, to the 1st of February 1683.

I M P O R T E D.

Alkermes Syrup, *l.* 240.

Aristolochia, *l.* 2920.

Ambergreece, *ounces* 7.

Annatto, *l.* 2787.

Amber mast *50. l.* 410.

Ammoniacum *l.* 352.

Antimonium Crudum, *£.* 15.

Almonds *tun* 10. *c.* 11.

Alpisty, or Canary Seeds, *c.* 4.

Aqua Vitæ, *Tun* 293.

Anchovies, *Cask* 455,

Ashes Pot, *Cask* 23.

Balsam Natural, *l.* 130.

Beer Spruce, *Bar.* 47.

Beads, *l.* 23070.

Bark Jesuits, *l.* 342.

Balautins, *l.* 160.

Butter Jessemine, *l.* 16.

Betries *French*, *l.* 260.

Bdellium, *l.* 76.

Barley *French*, *Tun* 4. *c.* 10.

Bark myrtle, *c.* 4.

Brimstone, *c.* 5.

Bone whale, *Tun* 11. *c.* 11.

Battry, *Fats* 20. *c.* 94.

Battry metal prepared for it, *Fats* 2. *c.* 49.

Books, *Maund* 1. *Bales* 30. *Cask* 1. *C.* 10.

M 2

Balls,

164 *A COLLECTION for Improvement*

Balls, *Fat*. 3.
 Barilla, *Bales* 375. *C*. 6. *Serns* 35.
 Bone Whale, *Fats* 6.
 Bristles, *Doz*. 223.
 Balls Wash, *Doz*. 2.
 Blades Sword, *Doz*. 468.
 Beads, *Grofs* 3.
 Boxes Tinder, *Doz*. 4.
 Brooms, *Doz*. 4649.
 Babies, *Grofs* 8.
 Band-string Twist, *Doz*. 514.
 Buttons Hair, *Grofs* 1888.
 Baskets, *Doz*. 10.
 Bazels Tanned, *Doz*. 139.
 Buckrams, *Parcels* 123.
 Barras *Ells* 5000.
 Boutal Keynes, *Parcels* 20.
 Balks, 2150.
 Bricks 3000.
 Casharilla, *l*. 55.
 Cantharides, *l*. 570.
 Cocheneel, *l*. 11973.
 Candles Wax, *l*. 1000.
 Cinnamon, *l*. 10270.
 Coral, *l*. 1878.
 Cloves, *l*. 1635.
 Copper wrought, *l*. 64.
 Chocolate, *l*. 1526.
 Cheese, *C*. 1. *q*. 1.
 Coffee, *Tun* 10. *C*. 5. *q*. 2.
 Cork, *Tun* 42. *C*. 10.
 Cherries dried, *C*. 4.
 Copper, *Tun* 8. *C*. 14.
 Coals, *Tun* 500.
 Clapboards, 616Q.
 Cordage, *Tun* 5.
 Cortex Guaiaci, *C*. 11.

Cocoa

of HUSBANDRY *and* TRADE. 165

Cocoa, *Tun* 35. C. 8.
 Currants, *Cask* 116.
 Capers, *Hogsheads* 57. *Cask* 35. l. 1550.
 Caddis, *Dozen* 114.
 Cups China, *Doz.* 1.
 Candles, *Doz.* 1.
 Cordivants, *Doz.* 421.
 Carpets Suits, 20.
 Calicoe Table Cloth, *Doz.* 1.
 Canes, 4500.
 Calicoes, *Parcels* 12.
 Canvas, *Ells* 600. *Bolts* 194.
 Spruce, Ells 57160.
 Cloths, *Scotch Yards* 16000.
 Colour Painting, *Cafe* 1.
 Camphire, l. 60.
 Corn Powder, l. 14.
 Doronicum, l. 25.
 Dornix, *Parcels* 1326.
 Deals, 34255.
 Durance, *Yards* 1155.
 Duck *Holland, Ells* 28700.
 Diaper, *Yards* 20584.
 Damask, *Yards* 850.
 Essence, l. 70.
 Eggs, 24200.
 Flowers Camomile, l. 500.
 Feathers Estrich, l. 90.
 Fustick, *Tun* 288. C. 5.
 Flax, *Tun* 55. C. 1.
 Figs, *Barrels* 32.
 Feathers, *Bags* 78.
 Figures Alabaster, *Cases* 2. *Boxes* 2.
 Fish Stock, *Titling* 20500.
 Freeze *Irish, Yards* 1650.
 Flock-work, *Parcels* 24.
 Fans Corn, 30.

166 *A COLLECTION for Improvement*

- Gum Guaiaci, *l.* 702.
 Elemi, *l.* 120.
 Ginger green, *l.* 200.
 Grapes dried, *l.* 2180.
 Galbanum, 2940.
 Galangal, *l.* 340.
 Gum Tragacanth, *C.* 14.
 Senica, *Tun* 1. *C.* 19.
 Ginger, *C.* 110. *Bags* 295.
 Gaules Sacks, 1309.
 Glass *French*, *Case* 10.
 Glasses, 4000. *Chests* 12.
 Herrings, *Barrels* 3.
 Hair Goats, *Sacks* 60.
 Hose Thread, *Dozen* 7.
 Hats, *Dozen* 7.
 Hose, *Doz.* 39.
 Horn Rings, *Gross* 61.
 Hensins, *Ells* 1200.
 Hemp, *Tun* 55. *C.* 13.
 Harfords, *Ells* 1600.
 Horn Ox, 4000.
 Herba Longees, *Parcels* 58.
 Hoops Iron, *Tun* 3.
 Honey, *Tun* 2. *Casks* 2.
 Hartshorn, *C.* 19.
 Hay Red, *C.* 9.
 Hides Cow, *l.* 8460.
 Red, *Rowl* 28. *pr.* 198.
 Muscovy 21.
 Tad, 142.
 Hinderlins, *Ells* 1200.
 Indico, *l.* 17140.
 Isinglass, *l.* 88.
 Incle wrought, *l.* 706. *Doz.* 715.
 Iron, *Tun* 41. *C.* 19.
 Old, *Tun* 9. *C.* 14.

- Ink Printing, *C.* 4.
 Juice Lime, *Tun* 4. *Hog sheads*, 2.
 Limons, *Cask* 30.
 Leather mask, *l.* 190.
 Lapis Lazuli, *l.* 95.
 Leaves rose, *l.* 150.
 Lentiscus, *l.* 200.
 Litharge of gold, *C.* 11.
 Lead White, *Tun* 8. *C.* 4. *Bar.* 14.
 Lignum Vitæ, *Tun* 15.
 Rhodium, *Tun* 28. *C.* 5.
 Latten Black, *C.* 14.
 Linen, *Ells* 35256.
 Germ. *Ells* 193030.
 Litmus, *Tun* 1. *C.* 15.
 Latten shaven, *C.* 10.
 Lawns Sletia, *Parcels* 2014.
 Litharge Silver, *Tun* 9.
 Limons chests, 436.
 Mercury, *l.* 180.
 Mace, *l.* 633.
 Millium Solis, *l.* 14180.
 Meats Sweet, *l.* 100.
 Manna, *l.* 1890.
 Meum, *Bar.* 14.
 Molossoes, *Cask* 74.
 Meal, *Bar.* 1.
 Mattens, *Bal.* 2.
 Madder, *Bal.* 67.
 Martin Tailles, 1500.
 Mats, 66.
 Marble Blocks, 6.
 Masss 34.
 Nutmegs, *l.* 2267.
 Necklaces Jet, *l.* 65.
 Nuts chest, *Bar.* 38.
 Wall, *Bar.* 267.

168 *A COLLECTION for Improvement*

Small, *Bar.* 20.
 Nails Head, *Bar.* 1.
 Oil, *l.* 400. *Cask* 1.
 Opium, *l.* 3110.
 Oats, *Quarter* 30.
 Opoponax, *l.* 300.
 Oil Turpentine, *l.* 2700.
 Walnut, *C.* 12. *Hog sheads* 5.
 Orpiment, *C.* 1.
 Orchall, *C.* 9.
 Olives, *Hog sheads* 36. *Bar.* 30.
 Onions, *Bar.* 61.
 Oranges, *Chest* 7304.
 Ozenbrigs, *Ells* 61043.
 Polium Montan. *l.* 720.
 Percilium, *l.* 3900.
 Prunelloes, *l.* 3240.
 Pistaches, *l.* 68.
 Pomatum, *l.* 14.
 Piemento, *l.* 17169.
 Potatoes, *C.* 6.
 Pruents, *Tun* 8. *C.* 3.
 Pibbles, *Tun* 10.
 Pumice Stones, *Tun* 2. *C.* 10.
 Pears dried, *Bar.* 12.
 Pitch and Tar, *Last* 210. *Bar.* 374.
 Pencils, *Dozen* 2500.
 Plates, single and double, *Bar.* 145.
 Plates Horn, *Dozen* 12.
 Pipes Tobacco, *Gross* 44.
 Pots Stone, *Cast*, 300.
 Plank Oaken, 329.
 Pintadoes, 16955.
 Paper Blue, *Reams* 30.
 Paper, *Reams* 13351.
 Plate White, *Ounces* 36.
 Pippens, *Bush.* 11.

Pearl

of HUSBANDRY and TRADE. 169

Pearl Seed, Ounces 160.
 Plaister of *Paris*, Mount. 8.
 Platters Wooden, 5800.
 Quicksilver, l. 4355.
 Quilts, 3.
 Rhabarb, l. 44.
 Roots Alkanet, l. 50.
 Rape, *Tun* 3.
 Refin, *Tun* 5.
 Rice, C. 17.
 Raisins, Barrels 1614. Parcels 13278.
 Serne 39.
 Rushes Bull, Load 37.
 Rods Basket, Bundles 120.
 Rye, Quarters 15.
 Sperma Ceti, l. 150.
 Seeds Garden, l. 6138.
 Onion, *Tun* 4. C. 18.
 Sal Armoniack, l. 9402.
 Gem. l. 800.
 Silk Wrought, l. 12665.
 Seeds Fennel, l. 2402.
 Agnus Castus, l. 80.
 Senna, l. 18800.
 Saffron, l. 200.
 Slude, l. 130.
 Seeds Worm, l. 7608.
 Snuff, l. 432.
 Scamony, l. 2290.
 Succads, l. 552.
 Smalts, l. 8.
 Soap, *Tun* 68. C. 8. Chest 100.
 Steel, *Tun* 7. C. 15.
 Snowting, *Tun* 1. C. 2.
 Sugar, Cask 3211. Chest 2.
 Syder Terce, 10.
 Shavings for Hats, Sac. 8. Fat 1.

Silk

170 A COLLECTION for Improvement

Silk Thrown, *Bal.* 10.

Raw, *Bal.* 12920.

Orgazine, *Bal.* 18.

Safflore, *Sack* 4.

Silk Ferret, *Bal.* 1.

Sables, 2800.

Staves Pipe, 54100.

Skins Beaver, 2515.

Lamb, 2900.

Sheep, 900.

Calve, 612.

Otter, 298.

Fox, 503.

Bear, 305.

Musquash, 769.

Racoon, 541.

Buck, 5345.

Cat, 210.

Marten, 1.

Minks, 148.

Vizer, 23.

Seal, 16.

Grey, 211.

Goat, 160.

Fitch, 114.

Morse, 20.

Sturgeon Keggs, 163.

Shoes old, 600.

Salmon, *Bar.* 3.

Sheets old, 1920.

Shruffe old, *C.* 2.

Stones Emery, 95.

Sufoes, *Parcels* 8.

Sandals, *pair* 20.

Stones Whet, 4000.

Goat, *Ounces* 191.

Sugar Loaf, *Cask* 3.

Sparts

of HUSBANDRY and TRADE. 171

- Sparrs, 550.
 Staves Hogthead, 3000.
 Thread, *l.* 5555. *Dozen* 2549.
 Turpentine, *l.* 305.
 Turbith, *l.* 600.
 Tortois Shell, *l.* 663.
 Turnsole, *l.* 1168.
 Treacle *Venice*, *l.* 7.
 Tutia Lapis, *l.* 100..
 Tea, *l.* 11.
 Twine, *Tun* 2. *C.* 8.
 Tartar Cream, *Tun* 5. *C.* 13.
 Teeth Elephants, *Tun* 6. *C.* 4.
 Tow, *Tun* 2. *C.* 3.
 Tallow, *Tun* 119. *C.* 3.
 Tobacco, *Hogheads* 225.
 Trenchers, *Gross* 63.
 Tyles Pan, 19772.
 Tapistry, *Ells* 3397.
 Thimbles, 19500.
 Tyles Gally, *Foot* 800.
 Timber Beech, *Load* 10.
 Ticking, *Ells* 825.
 Ticks, 78.
 Timber, *Load* 614.
 Verdigreece, *l.* 2052.
 Vermilion, *l.* 30.
 Vitriol, *l.* 570.
 Varnish, *Tun* 1.
 Vinegar, *Tun* 1. *Terce* 2.
 Velure, *Yards* 137.
 Wood Olive, *Tun* 15.
 Nicaragua, *Tun* 30. *C.* 10.
 Log, *Tun* 88.
 Cedar, *Tun* 35. *C.* 15.
 Box, *Tun* 18.
 Brazeletto, *Tun* 5. *C.* 10.

Wood

172 *A COLLECTION for Improvement*

- Wood Granadilla, *Tun* 7.
- Wax Bees, *T. 11. C. 9. q. 2.*
- Wyre Steel, *Tun* 2. *C. 11.*
- Latin, *Tun* 12. *C. 7.*
- Wine *Florence, Chests* 33.
- Port, Tun* 2095. *Hogsheds* 3.
- Spanish, Buts and Pipes* 6883.
- Rhenish, Casks* 105.
- Wood wrought, *Maund* 1.
- Wool *Polonia, Bal.* 28. *Bags* 3.
- Wool, *Bags* 636.
- Goats, *Sacks* 6.
- Estrich, *Bags* 5.
- Cotton, *Bags* 1082.
- Wares Small, *Fat* 4.
- Wood Lath, *Fathom* 5.
- Wainscots, 5656.
- Waters Perfumed, *Gal.* 3.
- Orange Flower, *Gallons* 34. *Chest.* 7.
- Wool Felt Pockets, 33.
- Wombs Beaver, 150.
- Wood round, *Parcels* 150.
- Waters distilled, *Gal.* 12.
- Yarn Worsted, *l.* 585. wrought 100.
- Spruce, *Tun* 2. *C.* 16.
- Cable, *Tun* 6. *C.* 9.
- Woollen, *C.* 10.
- Cotton, *Bal.* 629.
- Linen, *Fats* 23.
- Mohair, *Sacks*, 1055.

E X P O R T E D.

- A** Lum, C. 122.
 Aqua Vitæ, *Hogsheads* 1. *Rundlets* 4.
 Apothecary Wares, C. 74.
 Apparel Suits, 180.
 Ale, *Bar.* 2,
 Arsnick, C. 4.
 Beer, *Tun* 106.
 Bayes, single 82. double 2745.
 Bottles Glafs, 5100.
 Butter, *Firkins* 651.
 Bays Minikin, 117.
 Bridles, *Doz.* 68.
 Books, C. 20. *q.* 3.
 Boxes Snuff, *Doz.* 6.
 Brafs, C. 70.
 Bacon Flitches, 125.
 Buttons Hair, *Gross* 154.
 Bread Ginger, C. 1. *q.* 2.
 Bedsteads, 10.
 Boxes Paper, *Doz.* 6.
 Powder, *pr.* 8.
 Comb, 8.
 Patch, *pr.* 8.
 Dreffing, 8.
 Bryes, double 123.
 Bones Ox, 2000.
 Beans, *q.* 2.
 Brushhes, *Doz.* 7.
 Bellows Smiths, *pr.* 12.
 Bisket, C. 19. *Hogsheads* 14.
 Bodice, *Doz.* 50. *pr.* 9.
 Buttons Tin, *Gross* 31.
 Blankets, *pr.* 3.
 Cloths *Spanish*, 487.

Cloths

174 A COLLECTION for Improvement

Cloths Woollen, *l.* 376.

Long, 152.

Short, 93.

Horse, *pr.* 3.

Hair, *Parcels* 3.

Cottons Goads, 26881.

Chalk, *Tun* 110.

Cabinets, 2.

Copperis, *C.* 1337.

Chairs, 580.

Cushions, 607.

Couches, 3.

Cards Wool, *Doz.* 89.

Caps, *Doz.* 1722.

Cheese, *C.* 91. *q.* 1.

Curtains Suits 6.

Colours Painters, *Tun* 1.

Copper, *C.* 57. *q.* 1.

Cordage, *C.* 203.

Collars Horse 14.

Candles, *Doz.* 813.

Cards Tow, *Doz.* 13.

Cloaks, 10.

Coals, *Chaldron* 65.

Coats Waste, *Doz.* 50.

Clock Case, 1.

Catlins, *Gross* 1.

Camlets, *Parcels* 124.

Crape, *Parcels* 2.

Coats, 20.

Canes wrought, *Doz.* 7.

Corks, *gr.* 61.

Dozens, *single* 27. *double* 61.

Dollars and Pieces of Eight, 132642.

Drawers, *Chests* 5.

Diamonds, 4.

Dornix, *Yards* 360.

Engine,

of HUSBANDRY and TRADE. 175

- Engine, 1.
 Essence, *l.* 3.
 Earthen Wares, *Baskets* 1. *Parcels* 560.
 Earth Red, *Bushels* 14.
 Feather Bed and Blanket, 1.
 Flannel, *Yards* 2573.
 Freeze, *Yards* 770.
 Fringe Worsted, *Parcels* 7.
 Fustians, *Parcels* 758.
 Feathers, *l.* 8.
 Fish Cod, 1000.
 Frames Picture, 3.
 Fans, 6.
 Gloves, *Doz.* 346.
 Gunpowder, *C.* 50.
 Glue, *C.* 20.
 Glass and Earthen Wares, *Parcels* 7100.
 Glasses Prospective, 24.
 Girth Web, *Grofs* 4.
 Glasses Window, *Chests* 8.
 Looking, 143.
 Cut, 10.
 Garments Silk, 263.
 Globes, *Parcels* 2.
 Guittar, 1.
 Hose Worsted, *Doz.* 1659.
 Woollen, *Doz.* 2291.
 Thread, *Doz.* 38.
 Hats, 2357.
 Haberdashery, *l.* 4999.
 Hoops, 72700.
 Hops, *C.* 59.
 Heels Wooden, *Grofs* 2.
 Herrings, *Bar.* 190.
 Hair Kids, *C.* 90.
 Horses, 21.
 Hangings Dornix, *pr.* 1.
 Horns

176 *A COLLECTION for Improvement*

Horns Powder, *Doz.* 30.
Iron wrought, *C.* 443. *q.* 3.
 Old, C. 3.
Juice of Cherries, *Hogsheds* 4.
Jewels, *Box* 1.
Jumps, *Hogsheds* 6. *gr.* 31.
Kerfyes, 152.
Leather wrought, *l.* 3702.
Lead Fodder, 339. *C.* 14.
Linsy-Woolfy, *l.* 28.
Lace Bone, *Yards* 74.
 Gold and Silver, l. 19.
Linen *English, Parcels* 11.
Leaves Lathorn, 93600.
Last, *Doz.* 2.
Lead Red, *C.* 6.
 Black, C. 4.
Linseed, *qrs.* 68.
Lines Clock, *Bund.* 24.
Loaves Sugar, *C.* 44.
Musk, *Ounces* 1392.
Mace, *l.* 53.
Meal Oat, *Bush.* 30.
Mum, *Tun* 1. *Bar.* 28.
Meal Wheat, *qu.* 310.
Mules, 14.
Nails, *C.* 145.
Oaker Red, *C.* 1.
Pewter, *C.* 130. *qu.* 3.
Perpets, 6001.
Perukes 36.
Pates, 158.
Pippens, *Bush.* 325.
Pipes Tobacco, *Gross* 131.
Plate White, *Ounces* 2525.
Pease, *q.* 1.
Pictures, 28.

Petticoats,

of HUSBANDRY *and* TRADE. 177

Petticoats, 33.
 Paper Brown, *Ream* 20.
 Powder Hair, *l.* 48.
 Pattens and Clogs, *doz.* 16.
 Quilt, 1.
 Rugs *Irish*, 20.
 Ribbon Silver, *l.* 3.
 Rules, 3.
 Rags Old, *Tun* 7.
 Stuff, *Parcels* 865.
 With Gold and Silver, *Yards* 91.
 Silk wrought, *l.* 4575.
 Waste, *l.* 2720.
 Serges, 1739.
 Sayes, 920.
 Stubs Horsenail, *C.* 25.
 Saddles, 84.
 Stone Fire, *Load* 15.
 Spirits, *Gal.* 67.
 Skins Calve, *Doz.* 1325.
 Sheep, 53.
 Starch, *C.* 14.
 Shovels, *Doz.* 8.
 Shot, *C.* 81.
 Silk Thrown, *l.* 381.
 Skins Goat, *Doz.* 1.
 Coney, 31500.
 Salmon, *Bar.* 66.
 Shoes Old, *Doz.* 336.
 Soap Hard, *C. 2. q. 2.*
 Sleeves embroidered, *pr.* 6.
 Scoups, *Doz.* 2.
 Shirts, 200.
 Spar, 1.
 Scabbords Old, *Gross* 3.
 Sieves, 98.
 Swords and Belts, 4.

178 *A COLLECTION for Improvement*

Scrutores, 4.
 Scales, *pr.* 2.
 Syder, *Hog sheads* 5.
 Tables and Stands, 24.
 Tin, *C.* 1932. *qu.* 3.
 Trunks nest, 40.
 Trunks, 2.
 Ticks, 7.
 Tapestry, 2.
 Violins, 6.
 Work Clock, 880.
 Wool Cotton, *l.* 18731.
 Wax Bees, *l.* 4232.
 Wool Coney, *l.* 1966.
 Water Strong, *Cases* 60. *Gal.* 1157.
 Wax Hard, *l.* 126.
 Watches, 103.
 Wool Spanish, *Bags* 13.
 Hares, *l.* 110.
 Whips, *Doz.* 3.
 Zealots, 14000.
 Ware Upholstry, *C.* 3.

Exported by Certificate,

Affa Fætida, *l.* 1658.
 Almonds, *C.* 51. *qu.* 1.
 Anatto, *l.* 25.
 Beads, *l.* 5205.
 Barilla, *C.* 380.
 Benzoin, *l.* 50.
 Battry, *C.* 1. *qu.* 2.
 Buckrams, *Parcels* 30.
 Bone Whale, *C.* 4.
 Currants, *C.* 1641.
 Callicoes, *Parcels* 33049.
 Copper, *C.* 77.

Camphire

of HUSBANDRY and TRADE. 179

Camphire, *l.* 1588.
Cinnamon, *l.* 2056.
Crevats, 3958.
Cardamoms, *l.* 505.
Carpets, 164.
Cocoa, *C.* 10. *qu.* 2.
Cowryes, *C.* 502.
Cloves, *l.* 18.
Cochineel, *l.* 6062.
Cambogium, *l.* 200.
Casia Lignea, *C.* 2.
Damask, *Yards* 1535.
Figs, *C.* 295.
Feathers Estrich, *l.* 40.
Fustick, *C.* 138.
Ginger, *Bags* 120. *C.* 486.
Gaules, *C.* 429.
Ginger Green, *l.* 9050.
Gum Lack, *l.* 4450.
Ginghams, 6.
Hydes, 4820.
Hair Goats, *l.* 4725.
Herba Longees, 1108.
Hoops Iron, *Tun* 7.
Hose, *Doz.* 62.
Incle wrought, *Doz.* 20.
Indico, *l.* 155.
Iron, *Tun* 34. *C.* 10.
Linen Germany, *Ells* 67915.
 Scotch, *Yards* 100.
 Lawns Sletia, *Parcels* 716.
Linen, *Ells* 2808.
 Barras, *Ells* 2200.
 Checks, *Parcels* 233.
 Ozenbrigs, *Ells* 23191.
 Cambricks, *Parcels* 162.
 Holland Duck, *Ells* 434.

180 *A COLLECTION for Improvement*

- Spruce Canvas, *Ells* 975.
Draper, *Yards* 347.
Harfords, *Ells* 500.
Elinda Cloth, *Parcels* 16.
Hessens, *Ells* 42.
Lignum Vitæ, *Tun* 36.
Lead White, *C.* 36.
Lack Stick, *C.* 2260.
Nutmegs, *l.* 160.
Nillaes, *Parcels* 131.
Oil, *Pipes* 5. *Gal.* 517.
Ditto, *Tun* 91. *Hogsheds* 13. *Casks* 15.
Olibanum, *C.* 81.
Pearl Seed, *Ounces* 499.
Peniascoes, 140.
Pantiles, 1300.
Plates Latten, *Bar.* 33.
Pepper, *l.* 15039.
Prunes, *C.* 12.
Paper, *Reams* 60.
Rice, *C.* 94.
Rangoes, 10000.
Romalls, 1913.
Raisins, *Tun* 20. *C.* 18.
Sal Armoniack, *l.* 239.
Silk China, *l.* 498.
Raw, *l.* 13564.
With Gold and Silver, *Parcels* 28. *Ells* 130.
Stuffs Guinea, 100.
Sugar, *C.* 6117.
Silk wrought, *l.* 1132.
Salt Petre, *Bags* 100.
Seed Worm, *l.* 1060.
Soap, *C.* 165.
Skins Beaver, 587.
Bear, 90.

Skins

of HUSBANDRY *and* TRADE. 181

Skins Morfe 86.
Otter, 206.
Saffron, *l.* 50.
Scamony, *l.* 60.
Steel, *C.* 4.
Stuff, *Yards* 70.
Hair, *Parcels* 3.
Sheets old, 2560.
Shell Tortois, *l.* 130.
Twine, *C.* 11.
Thread, *l.* 310.
Tobacco, *l.* 182792.
Turmerick, *l.* 5929.
Tapistry, *Ells* 196.
Teeth Elephant, *C.* 120.
Thread Pack, *l.* 21.
Teeth Sea Morfe, *l.* 280.
Wine, *Tun* 18. *Hogshead* 1. *Terce* 2. *Buts* 8.
Cask 10. *Gal.* 1455.
Wool Spanish, *Bags* 96.
Cotton, *l.* 5700.
Wood Log, *Tun* 25. *C.* 5.
Braziletto, *C.* 110.
Wine Rhenish, *Aunes* 97.
Wax Bees, *C.* 57.
Yarn Mohair, *l.* 9607.
Cotton, *l.* 23054.
Ships entred inward, 159.
Cleared out, 60.

An experiment of the ingenious Mr. John Worlidge of Petersfield in Hampshire, for improving and fining of Cyder.

S I R,

THE publishing those *letters* and *notes* you have taken the pains to *collect*, proving to be of great use to the inquisitive and ingenious, and the candid reception some of my *experiments* and *observations* have met withal, together with the *obligations* you have laid upon me, encourage me to give you a brief account of what I have observed and made trial of in the *fining* of *cyder*.

This *liquor* (although excelling all other whatsoever that this kingdom naturally affords, as well for its delicacy as its plenty) hath been very much traduced and abused by the carelessness and ignorance of the operators, either by the untimely gathering the fruit it is made of, the too hasty working them up into *liquor*, or the ill management of it after it is in the vessel; that the reputation this *drink* has gain'd in two or three hot years, when fruit has been very well ripened, that almost every one could make good *cyder* for present drinking, it hath lost again in a cold moist year (when there hath been a defect in the ripening of the fruit) for want of that care and skill that is required in such operations, and that are necessary to be used, let the year prove seasonable or unseasonable; not that I pretend to an absolute understanding of the right ordering and improving so curious a *liquor*, but what hath occur'd in the ordinary method

method of making of *cyder*, I will here candidly impart.

Having planted a convenient number of *red-streak trees*, according to my quantity of ground, and particular occasion, I had several times made *cyder* of that *fruit*, but found it much inferior to that of *Herefordshire*, of which I had often tasted; it wanted that fulness of body the other had, and richness in taste, wherewith it was impregnated; both which defects, I concluded the *luscious* and *juicy sweet apple* would supply, it making too fat a *liquor* to be good of itself; accordingly I added about a fifth part of *sweet apples* to the *redstreaks* (they being ripe about the same time) and the effect answered my design; for out of both these fruits I had a very rich *liquor*.

But the *juice* of the *sweet apple* being of a more gross and tenacious nature than that of any other *apple*, and fearing it might impede the *fining* of my *cyder*, I added in the *vessel* about a tenth part of the expressed *juice* of *golden rennets* thorough ripe, but gathered newly from the *tree*, being near of the nature, and almost equal in goodness to the *redstreaks*, which begat a fermentation; so that in about three *weeks* time this *cyder* was indifferently fine, leaving the *vessel* unstop'd all that time, only laying a loose cover on the *bunghole*.

For I have observed, that the *cyder* of new gathered *fruit* *fines* much sooner and better than that of such *fruit* that hath lain long gathered and *mellow*, which hath made many of opinion, that *fruit* from the *trees* made the best *cyder*.

It hath been also observed, that a mixture of *apples* hath produced the best *cyder*. But that hath been only where the *liquor* of the more

luscious and *sweeter* apple hath meliorated or enriched that of the more *jejune*, or that of the less mature *fruit*, hath put the *must* or *mulce* of the *mellow* into a *fermentation*. Therefore mixtures of *acid* with *acid*, *sweet* with *sweet*, or *mellow* with *mellow fruit*, have no sensible effect the one on the other.

Close stopping of any *liquor* prevents *fermentation*, and so doth its standing in a broad *vat*, or open *vessel* uncovered: but the tunning of your *cyder* up soon after it is pressed, giving of it a sufficient breathing *vent*, puts it into a gentle *fermentation*, that sometimes in two, three, or four *weeks* it becomes fine.

As soon as it hath well *fermented*, which may easily be discerned, if you take once in four or five days a little out of the *bunghole* with a *glass pipe* (which you may do by letting of it down four or five *inches* into the *cyder*, and stopping the upper end with your *thumb*) by which means may be observed the gradual *fermentation* of your *cyder*.

After I had found it to be indifferently *fine*, it was drawn into the biggest bottles of two, three, or four *quarts* a piece; and the bottles then stood about three *weeks* loosely stop'd, that *perspiration* might not be hindered, and that a more perfect *fermentation* might be had, and so standing, whatever of the flying *lee* now remained, either settled in the bottom, or ascended on the top in the neck of the bottle, the whole body of the *cyder* appearing to your eye, against the light, to be very transparent; for any *liquor* will much sooner *fine* in a *glass bottle* than in a *wooden vessel*, which certainly must be from the coldness of it.

NOTE,

N O T E,

That in case at the opening of your bottle, when you intend to crane it off, any of the *feces* rise, which will sometimes happen, when it is too closely stop'd, then let it stand open an hour or two, and it will resettle.

Then with a *siphon* or *crane* (made of a crystal or flint glass pipe) was this *superfine liquor* drawn off into quart or other bottles, and close stop'd for use. The bottoms that were left in the craning were added together in a small vessel, and after twenty four hours standing became as *fine* as the other, and was drawn off as the other, so that there was no more loss in this operation, than the very dregs.

Many times *cyder* that hath been made of the best fruit, mature and carefully ordered, hath in time proved very poor, thin and eager, which can be imputed to no other cause than that after it hath *fermented* (which it will do at first, if ever) it hath stood on its own lee, which thro' its own corrupt nature, hath caused several reiterated *fermentations*, and thereby infected the (once good) *cyder*, with the ill qualities of the *acid* and *putrid feces*: and *cyder* also standing long in a vessel doth acquire whatever ill taste the vessel can afford it.

And common experience tells you, that *cyder*, not *fine*, is not well tasted, nor is it of the strength or body as is the *fine*, especially that which hath been *fined* in time; for whenever you open a bottle of *cyder*, of which the upper part is clear, and the bottom foul, the first glass drinks much more pleasantly than the last,
the

186 *A COLLECTION for Improvement*

the least mixture of the flying *lee* making a sensible alteration for the worse.

Therefore the method that I have used, and that is here prescribed to purify *cyder*, without any manner of addition whatsoever, but by *mechanic operation* only, in a short time, before its best parts are prey'd upon, or corrupted, doth so far meliorate this *drink*, that in five or six *weeks* time, you may have it of a rich and full body (so that the *fruit* were good) excellent bright *Canary* colour, without the least cloudiness in the last *glass*, and of so naturally sweet and delicate a taste, that you may keep it many years in a good *conservatory*, without any fear of decay, having nothing in it to beget a new *fermentation*, but of itself it will increase in strength and virtue, that it may not undeservedly be stiled,

The most transcendent liquor this nation affords.



TUESDAY

TUESDAY, *April 25.* 1683. NUMB. XV.

The CONTENTS.

A general account of the goods imported, exported, and exported by certificate, with the number of ships entred into, and cleared out from the city of London, from the first of February, 168², to the first of March, 1683, extracted from the bills of entry.

IMPORTED.

A Mber rough, *l.* 50.
Aqua Vitæ, *Tun* 202. *Ps.* 36.
Piece, 36. }
Cask, 19. }
Anchovies, *Bar.* 571.
Ditto, *Vials* 6.
Almonds, *C.* 119. *l.* 28.
Argol, *C.* 125.
Anatto, *l.* 131.
Barley Pearl, *C.* 8.
Hull'd, *C.* 9.
French, *C.* 80.
Balls Wash, *Gross* 1.
Barras, *Ells* 7600.
Battery, *Fats* 6.
Babies, *gr.* 8.
Barrilla, *C.* 70.
Balsam Artificial, *l.* 6.
Buffs with Gold Flowers, 9.

Beads

188 *A COLLECTION for Improvement*

Beads Amber, *Bag* 1.
 Coral, *l.* 167.
 Beer Spruce, *Bar.* 8.
 Berries Juniper, *C.* 10.
 Beans, *Bask.* 8.
 Blacking, *l.* 56.
 Buckrams Germ. *Parcels* 82.
 Buckles Chrystal, *C.* 3.
 Buttons Hair, *gr.* 212.
 Boxes Spice, *Doz.* 10.
 Books, *Cas.* 80. *l.* 56.
 Borax, *l.* 760.
 Birding Pieces 50.
 Boxes Birds-nest, 1.
 Boxes Dressing lackered, 2.
 Bullrushes, *Load* 14.
 Brissels Hogs, *Doz.* 200.
 Bricks, 29500.
 Bugles, *l.* 115.
 Brooms, *Doz.* 1450.
 Bone Whale, *C.* 1312.
 Casia Fistula, *l.* 350.
 Cream Tartar, *l.* 14.
 Coral whole, *l.* 426.
 Fragment, *l.* 1795.
 Clouts Guinea, 4000.
 Checks, 423.
 Canvas Spruce, *Ells* 5100.
 Cordage, *C.* 22.
 Cordevants, *Doz.* 888.
 Copper, *Tun* 14. *C.* 19.
 Clap Boards, 450.
 Copperas green, *C.* 55.
 Cork, *C.* 236.
 Chocolate, *C.* 9. *l.* 16.
 Cheese, *C.* 10.
 Candles, *Doz.* 2100.

Candles

of HUSBANDRY *and* TRADE. 189

Candles Wax, *l.* 6.
Caps, *Doz.* 12.
Cyprus Birds, *Bil.* 25.
Cochineel, *l.* 3548.
Calicoes, *Parcels* 522.
Calicoes mix'd with Silver, *Parcels* 178.
Cute, *C.* 2.
Calicoe Cupboard Cloths, 26.
Cherquonees, *Parcels* a half.
Cortex Winteranus, *l.* 28.
Capers, *l.* 370.
Carpets Turkey, 7.
Carpets Leather, 13.
Carpets, 20.
Coach and Callash, 2.
Cotton, *Bags* 53.
Cocoa, *C.* 368.
Currants, *Sacks* 218.
Cranberries, *Bar.* 11.
Coffee, *C.* 48.
Cloves, *l.* 452.
Colours Paint, *a parcel.*
Carrabees, *l.* 346.
Coals Scot, *Tun* 48.
Cabinets, 1.
Chela, 1.
Civit, *Ounces* 142.
Deals, 27625.
Duek Holland, *Ells* 11800.
Dornix, *Parcels* 340.
Dimety, *Yards* 1004.
Diaper, *Yards* 12447.
Durance, *Yards* 28.
Desk Chests lackered 1.
Eggs, *Bar.* 116.
Essence, *l.* 6.
Elatches, *Parcels* 3.

Elatches

190 *A COLLECTION for Improvement*

- Elatches strip'd with Gold, *Parcels* 9.
 Fans Wood, 90.
 Flints for Guns, *Tun* 10. *Bar.* 2.
 Flints, 6000.
 Flax, *C.* 772.
 Fustick, *Tun* 118.
 Feathers, *Bags* 29.
 Feathers Estridg. *l.* 88.
 Felts Dutch, 18.
 Figures Alabaster, *Cas.* 3.
 Figs, *Bar.* 1.
 Fish Stock-titling, 10500.
 Galls, *Sacks* 389. *Bags* 190.
 Galls, *C.* 110.
 Glasse Drinking, 1800.
 Glas Window, *Cas.* 76.
 Glue, *C.* 4.
 Girdles Silk mix'd, 29.
 Gowns Chint, 8.
 Ginger, *Bags* 15.
 Galbanum, *l.* 700.
 Hair Goats, *l.* 550.
 Hair Goats, *Bags* 62.
 Horns Hart, *pr.* 279.
 Hops, *Bags* 10.
 Hinderlands, *Ells* 300.
 Hemp, *C.* 50.
 Hides loth. 50.
 Hose, *Doz.* 50.
 Thread, *Doz.* 50.
 Horn tips, *C.* 16.
 Horn Plates, 1300 *Doz.* 78.
 Cow, 700.
 Hoops Iron, *Tun* 9. *C.* 10.
 Hories *p.* Coach, 23. Saddle, 3.
 Horn Shavings, *Parcel* 1.

Hides

of HUSBANDRY *and* TRADE. 195

Hides Cow and Ox, C. 40.
Hides Cow, 189.
Iron, *Tun* 321.
 Bundles, 6.
 Old, *Tun* 34.
 Doubles. *Doz.* 30.
Incles wrought, l. 18.
Incle, *Doz.* 50.
Juice Lime, *Tun* 2.
Ink Printers, C. 14.
Indigo, l. 1106.
Ivory wrought, l. 25.
Linen, *Ells* 19346.
 German, *Ells* 42830.
 Polony, *Ells* 400.
Lace Point, *Box* 2.
Lapis Calaminar. C. 12.
Lattin Shaven, C. 7.
Lattin black, C. 76.
Lemons and Oranges, *Chest* 868.
Lemons, *Chest* 819. *Baskets* 71
Leather Mask, l. 172.
Lawn Sletia, 2712.
Linen Cambricks, *Parcels* 21.
Lead White, C. 30.
Legs rune, 500.
Longees herba, 2212.
Litmus, *Cask* 100.
Mader Bails, 113.
Marmalet, l. 46.
Masts, 83.
Mace, l. 351.
Maps Printed, *Reams* 2.
Mats, *Bundles* 65.
Mats, 38.
Manna, l. 1334.
Meal, *Bush.* 4.

Metal

192 *A COLLECTION for Improvement*

Metal Bell, *Fat.* 2.
 Mohair, *Yards* 222.
 Molossos, *Cask* 144.
 Mum, *Bar.* 143.
 Marble Blocks, 22.
 Nutmegs, *l.* 1900.
 Necklace Pearl, 1.
 Neckcloths Calico mix'd, 1130.
 Neckcloths, 25817.
 Nutmeg Canded, *l.* 24.
 Oil, *Far* 245. *Tun* 10. *Gal.* 30.
 Linseed, *Tun* 9. three quarters.
 Train, *Tun* 4.
 Hempseed, *Tun* 10.
 Jeffamin, *a parcel.*
 Oars, 1150.
 Olives, *Cask* 3. *Hogshead* 21. *Bar.* 418.
 Oranges, *Chest* 3515.
 Ditto Loose, 20200.
 Oranges and Lemons, *Chests* 280.
 Ozenbrigs, 75650.
 Opoponax, *l.* 500.
 Orchal, *C.* 3.
 Olibanum, *C.* 12.
 Paper, *Ream* 25271.
 Ditto Brown, *Bundle* 40.
 Demy, *Ream* 10.
 Blue, *Ream* 320.
 Royal, *Ream* 50.
 Painted, *Doz.* 6.
 Cap, *Ream* 103.
 Prunes, *Box* 6.
 Prunes, *Cask* 11. *Bar.* 3.
 Pintadoes, 2478.
 Pot-ash, *Casks* 128.
 Pipe Staves, 3500.

Pibbles,

of HUSBANDRY and TRADE. 193

- Pebbles, *Tun* 40.
 Pitch, *Last* 50. *Bar.* 7.
 Pease, *Bush.* 1.
 Pistaches, *l.* 6640.
 Pots Stone Cast, 1685.
 Prunelloes, *l.* 240.
 Plates Harness, 247.
 Pears green, 4500.
 dried, *Bar.* 6.
 Powder Hair, *l.* 56.
 Plaister Paris Mounts, 8.
 Pipes Tobacco, *gr.* 320.
 Pistol Cases, *pr.* 27.
 Perfumes, *Box* 1.
 Plates Latin single, *Bar.* 10.
 double and single, *Bar.* 37.
 Pelts Sheep, 200.
 Pictures, 16.
 Pallampores, 561.
 Petticoats China, 5.
 Pots Iron, *Doz.* 61.
 Pitch Burgundy, *C.* 80.
 Quilts Calico, 12.
 Silk 2.
 Raisins, *Bar.* 3612.
 Raisins, *C.* 7.
 Basket, 204.
 Smyrna, Cask 5. *Bar* 1.
 Malaga, Pec. 224.
 Rosin, *Tun* 24.
 Romals, 10.
 Rhubarb, *l.* 120.
 Silk wrought Gold and Silver, *Parcels* 835.
 Silk wrought India, *l.* 86.
 Silk Ferret, *Bundles* 2.
 Silk wrought, *Parcels* 96.
 Silk wrought Cases, 7.

194 *A COLLECTION for Improvement*

Silk wrought Bales, 346.

Ditto, *l.* 5325.

Raw, *l.* 11.

Thrown, *Bales* 6.

Orgazine, *Bales* 29.

Snuffers, *Doz.* 252.

Shavings Hats, *Sack* 1.

Sal Armoniacum, *l.* 2800.

Storax Liquida, *l.* 4.

Sperma Ceta, *l.* 127.

Scamony, *l.* 585.

Sena, *l.* 900.

Sanguis Draconis, *l.* 130.

Storax Calamita, *l.* 680.

Seeds Onion, *C.* 3. *l.* 21.

Worm, *C.* 20. *l.* 106.

Garden, *C.* 2. *l.* 38.

Annis, *C.* 90.

Mill, *Busb.* 24.

Lyne, *Busb.* 9.

Lack, *l.* 13802.

Pearl, *Oz.* 5727.

Skins Fox, 649.

Kid, 51200.

Greys, 2039.

Hufs, 286.

Cat, 516.

Otter, 2071.

Beaver, 16280.

Ditto Wombs, 12.

Buck, 3698.

Calf, *Doz.* 40.

Goat, *Doz.* 1.

Sheep tann'd, *Bun.* 9.

Fletchers, *Doz.* 36.

Coney, *Doz.* 103.

Lamb, 100.

of HUSBANDRY *and* TRADE. 195

- Skins Fitch, 5.
Dog, 26.
Musquashes, 1646.
Racoon, 404.
Wolf, 52.
Minks, 1131.
Vizers, 224.
Seal, 2.
Elk, 39.
Bear, 144.
Squash, 1229.
Deer, 347.
Mouse, 3.
Martin Timber, 333.
Timber Ermin, 4.
Badger, *Doz.* 40.
Skins in *Apack* 1.
Suckers, *l.* 156.
Steel, *C.* 368.
Salt wey, 105.
Sugar, *Cask* 300.
Sugar, *Chest* 3.
Soap, *C.* 45.
Sturgeon, *Cag.* 9.
Sherbet, *Box* 3. *l.* 20.
Sword Blades, *Doz.* 33.
Syder, *Tun* 12. *Hogsheads* 1. 14 *Terce.*
Stocks Anchor, 42.
Staves Hogshead, 3600.
Scamoti, *Yards* 150.
Stones Querne, *Last* 2.
Mill, 2.
Paving, *Foot* 795.
Ditto, *Number* 7000.
Grave, 38.
Step, 158.
Spar Timber, 1750.

196 *A COLLECTION for Improvement*

- Syrup Alkermes, *l.* 120.
 Shell Tortoise, *l.* 25.
 Stuffs Hair, *Parcels* 24. *Yards* 1598.
 Snuff, *l.* 40.
 Scales for Sword, *Bund.* 1150.
 Slude, *l.* 1340.
 Shellack, *l.* 25840.
 Silver and Gold Cafes, 7.
 Sheets Callico, *pr.* 4.
 Silk India Gown, 1.
 Silver and striped Sufaes, 6.
 Shoes and Slippers India, *pr.* 16.
 Sashes Gold, 2.
 Thread Suiters, *l.* 4125.
 Outnall, *Doz.* 32.
 Bridges, *Doz.* 2877. *l.* 224.
 Whited Brown, *l.* 85.
 Toys, *Fat* 1.
 Ticking, *Parcels* 702.
 Tobacco, *C.* 1702. *Hogshhead* 42. *l.* 5518.
 Tiles Pan, 7800.
 Tiles Gally, *Foot* 600.
 Turpentine, *C.* 945.
 Tar, *Last* 59. *Bar* 54.
 Turbith, *l.* 70.
 Twist Bandstring, *Doz.* 200.
 Timber, *Load* 844.
 Knees, 74.
 Balkes, 875.
 Teeth Elephant, *C.* 10.
 Thrums Woollen, *l.* 100.
 Tarras, *Bar* 160.
 Tapestry, *Ells* 813.
 Thimbles, 10500.
 Trees Walnut, 120.
 Tea, *l.* 123.
 Taffaties Herba, 1877.

of HUSBANDRY and TRADE. 197

- Vellure, *Yards* 350.
 Vermifhelle, *C.* 7.
 Vermilion, *l.* 300.
 Vinegar, *Tun* 1.
 Wine Rhenish, *Cask* 133. *Parcels* 37. *Aum.* 2.
 Port, *Tun* 16025. *Pipes* 272.
 Canary, *Pipes* 576.
 Florence, *Chest* 73.
 Tent, *Buts* 16.
 Malaga, *Buts* 101. *Cask* 6.
 Smyrna, *Chest* 2.
 Sherry, *Buts* 187.
 Wool Sheep, *Bags* 159.
 Cotton, *Sacks* 137.
 Lamb, *Bags* 6.
 Goat, *Bags* 10.
 Wood Log, *Tun* 89. *C.* 16.
 Gronadilla, *Tun* 1.
 Brazil, *C.* 110.
 Lath, *Fath.* 46.
 Wood Box, *Tun* 27. *C.* 2.
 Wainscot Leaves, 1755.
 Water Orange Flower, *Chest* 15. *Jar* 8. *Gal.* 4.
 Wyre Latin, *C.* 12.
 Steel, *l.* 4555.
 Wares Alabaster, *Boxes* 3.
 Small, *Fats* 3.
 China, *Parcels* 3.
 Wood Braziletto, *Tun* 30. *C.* 10.
 Wax Bees, *C.* 73.
 Yarn Mohair, *Sac.* 14.
 Cable, *C.* 61.
 Worsted, *l.* 1109.
 Linen, *Fats* 10. *Bag* 5.
 Cotton, *Bales and Fanguts* 193.
 Ditto Cotton, *l.* 2750.

198 *A COLLECTION for Improvement*

EXPORTED.

A Quavitæ, *Hogsheds* 15. *Cask* 1.
Allum, *C.* 45.

Apples, *Bush.* 3.

Apparel, *Chest* 1.

Almego, *Bush.* 28.

Backs for Chairs, 8.

Bottles Glass, 5506.

Brass, *C.* 15. *l.* 28.

Buttons Hair, *Gross* 9.

Silk, *Parcel.*

Bays Minicin, *Parcels* 264.

Double, *Parcels* 2408.

Single, *Parcels* 105.

Books, *C.* 24. *l.* 49.

Beans, *qu.* 1.

Beer, *Tun* 126.

Bacon Flitch, 88.

Bisket, *C.* 340.

Block Marble, 1.

Bridles, *Doz.* 65.

Butter, *Firkin* 203.

Blankets, *pr.* 70.

Brandy Cherry, *Gal.* 38.

Buckles Stone, *Parcel* 1.

Bellows Smith, *pr.* 1.

Boxes Coloured, 100.

Dressing, 1.

Bones Ox, 1600.

Brushes, 2.

Bedstead, 1.

Bricks, 1000.

Cloth Spanish, *Parcels* 948.

Long, 392.

Short, *Parcels* 187.

Rash,

of HUSBANDRY and TRADE. 199

- Rash, *Parcels* 54.
- Woollen, *Parcels* 535.
- Dozens Single, 32.
- Dozens Double, 5.
- Oiled, *Yard* 24.
- Hair, *Parcels* 3.
- Cotton Goods, 9984.
- Chairs, *Doz.* 968.
- Cane, 14.
- Chariots, 2.
- Cheese, *C.* 409.
- Charcoal, *Busb.* 24.
- Chocolate, *C.* 6. *qu.* 3.
- Cordage, *C.* 172. *l.* 91.
- Copper and Brass, *C.* 13.
- Copper, *C.* 48. *l.* 28.
- Copperas, *Tuns* 386. *C.* 23.
- Coaches, 4.
- Couches, 13.
- Clocks, 4.
- Clock-work, *C.* 15.
- Clock Cases, 12.
- Coals, *Chald.* 245.
- Caps Monmouth, *Doz.* 42.
- Velvet, *Doz.* 3.
- Caps Plain, 3.
- Candles, *Doz.* 785.
- Colours Paint, *C.* 2.
- Cards for Wool, *Doz.* 5.
- Cards Game, *Doz.* 86.
- Canes, *Doz.* 4.
- Corks, *gross* 55.
- Coats Waste, *Doz.* 16.
- Camlets, 10.
- Cakes Rape, 17000.
- Coats Men, 73.
- Drawers, *Chest* 16.

200 *A COLLECTION for Improvement*

- Dornix, *Parcels* 88.
 Drums, 28.
 Flannel, *Yards* 3343.
 Frames, *Doz.* 1.
 Fringe Gold and Silver, *Oz.* 60.
 Flower, *Busb.* 44.
 Fans, *Doz.* 4. and a half.
 Fustians Ends, 129.
 Fustick, *C.* 1.
 Glasse Hour, *Doz.* 10.
 Glasse and Earthen Ware, 3940.
 Prospect, *a parcel.*
 Looking, 53.
 Drinking, 2575.
 Window, *Chest* 14.
 Gloves, *Doz.* 750.
 Cotton, *Doz.* 2.
 Glue, *C.* 59.
 Gold Foreign, *Oz.* 3600.
 Guns Iron, 40.
 Gowns India, 6.
 Haberdashery, *C.* 54. *qu.* 1.
 Hose Thread, *Doz.* 46. and half.
 Wool, *Doz.* 3861.
 Worsted, *Doz.* 1096.
 Cotton, *Doz.* 7.
 Hoops, *Bar.* 73620.
 Hops, *C.* 74.
 Hats Beaver, 30.
 Castor, *Doz.* 125.
 Felts, *Doz.* 248.
 Castors and Beavers, *Doz.* 135.
 Harnesses, *pr.* 22.
 Hair Kids, *C.* 132.
 Holsters, 23.
 Herrings Red, *Bar.* 15. *Cade* 36.
 Horses, 10.

Horns

of HUSBANDRY *and* TRADE. 201

Horns Ram, 1000.
 Horn Plates, 76650.
 Iron *Tun* 8.
 Wrought, C. 233.
 Jumps, *gross* 34. *Doz.* 3.
 Kerseys, 391.
 Lace Bone, *Yards* 94.
 Thread, *a parcel*.
 Gold and Silver, *l.* 287.
 Leather, *l.* 771.
 Wrought, and Shoes, *l.* 864.
 Lead Fodder, 450. C. 546.
 Black, *l.* 190.
 Red, C. 6.
 Linen English, *Parcels* 6.
 Linsey-Woolsey, *Parcels* 207.
 Leaves Lanthorn, 10200.
 Lampreys, 25000.
 Linseed, *qu.* 40.
 Lasts Shoemakers, *Doz.* 13.
 Mum, *Bar.* 23.
 Meal Wheat, *qu.* 7. *Busb.* 1.
 Oats, *qu.* 102. *Busb.* 19.
 Maps Printed, 56.
 Mills for Cyder, 6.
 Nails, C. 270.
 Stubs, C. 58.
 Nets Fish, 1.
 Oil Linseed, *Gal.* 30.
 Organs old, 1.
 Perpets and Serges, *Parcels* 1870.
 Perpets, *Parcels* 2928.
 Pictures, 28.
 Pieces of Eight, *Parcels* 53265.
 Pease, *qu.* 1. *Busb.* 21.
 Pewter, C. 56. *qu.* 3.
 Pipes Tobacco, *gross* 475.

Pots

202 *A COLLECTION for Improvement*

- Pots Earthen, 1425.
 Plate wrought, Oz. 36.
 Perriwigs, 81.
 Powder Gun, C. 633. *qu. 3.*
 Pennistones, 2.
 Pomatum, l. 1.
 Paper Brown, *Ream* 42.
 Printed, *Ream* 2.
 Powder blue, l. 139.
 Presses, 1.
 Pastebord, *gross* 10.
 Petticoats, 3.
 Rugs, 13.
 Irish, 130.
 Ribbon Gold and Silver, *Yards* 47.
 Says, *Parcels* 1301.
 Says and Chennes, 12.
 Serges, 2374.
 Silk wrought, 2364.
 Thrown, l. 465.
 Waste, l. 1970.
 Silk Stuff, *Yards* 20.
 Shovels, 34.
 Shoes, l. 3931.
 Old, *Doz.* 60.
 Stuffs, *Parcels* 1918.
 Scrutore and Drawers, 6.
 Shot, C. 957. l. 28.
 Silver Foreign, Oz. 282242.
 Skins Calf, *Doz.* 1285.
 Sheep, 140.
 Coney, 10800.
 Coney roundings, l. 15.
 Beaver, 8.
 Goat Drest, *Doz.* 14.
 Otter, 30.
 Fitch, 94.

Cat,

of HUSBANDRY and TRADE. 203

- Cat, 100.
Shreds of Fox Tails, 200.
Sugar Loaf, C. 813.
Stands, 2.
Saddles, 232.
Shot, C. 971. *qu.* 1.
Stones Fire, *Load* 20.
Screens, 2.
Shavings Lanthorn, *l.* 12.
Scoups, *Doz.* 5.
Starch, C. 4.
Syder, *Gal.* 459. *Hogshead* 57.
Soaps *Cask* 6. C. 1.
Seed Clover, 545.
Stone grind, *Chal.* 4.
Spectacles and Cases, *a parcel.*
Socks Cotton, *Doz.* 1.
Socks and Caps, *Doz.* 26.
Tables, 7.
Trunks Nests, 25.
Tin, C. 528.
Tow, *Doz.* 1.
Ticking, *Parcels* 5.
Tankards Silver, 2.
Violins, *Box* 1.
Varnish, *l.* 48.
Wool, *Doz.* 4.
 Cotton, *l.* 17052.
 Spanish, *Balls* 7.
 Lambs, C. 15.
 Coney, *l.* 675.
Wool Red, *Bag* 3.
 Beaver, *l.* 200.
Weld, C. 1. *l.* 56.
Wood, C. 24.
Wax hard, *l.* 2466.
Wax Bees, C. 17.

Ware

204 *A COLLECTION for Improvement*

Ware Upholsterers, *a parcel.*

Tin, *a parcel.*

Turners, *a parcel.*

Apothecary, *C. 29. qu. 3.*

Confectionary, *l. 56.*

Earthen, *4233.*

Waters Strong, *Gal. 733.*

Sweet, *Box 1.*

Wood Olive, *Cafe 2.*

Whiting, *C. 10.*

Wheels Cart, *pr. 3.*

Coach, *pr. 2.*

Yarn Mohair, *l. 39639.*

Cotton, *l. 101839.*

Exported by Certificate.

A Lmonds, *C. 4. l. 56.*

Aquavitæ, *Gal. 1075.*

Argol, *C. 3.*

Arcitolatæ, *l. 800.*

Barras, *Ells 550.*

Barrilla, *C. 804.*

Beads Coral, *l. 538.*

Bugles great, *l. 700.*

Buckrams, *8.*

Brazelet, *Tun 13. C. 1.*

Bone Whale, *C. 4.*

Camlets, *Yards 65.*

Cambricks, *Parcels 59.*

Demy, *12.*

Camphir, *l. 2207.*

Canvas Spruce, *Ells 4700.*

Cocoa, *C. 159.*

Cochineel, *l. 1540.*

Currans, *C. 1842.*

Cinnamon, *l. 460.*

Calicoes

of HUSBANDRY and TRADE. 205

Callicoes long, *Parcels* 60.

Parcels 20172.

Checks, 58.

Cloves, *l.* 93.

Coffee, *C.* 34. *qu.* 2.

Capers, *l.* 9750.

Copper, *l.* 98.

Cassia Fistula, *l.* 4052.

Cowries, *l.* 88.

Chercoles, *Parcels* 40.

Coral Fragment, *l.* 91.

Whole, *l.* 183.

Cambogium, *l.* 1116.

Chandenes, *Parcels* 20.

Contrayerva, *l.* 50.

Cordivants, *Doz.* 60.

Duck Holland, *Ells* 2805.

Diaper, *Yards* 254.

Dates, *C.* 18.

Diptimus, *l.* 600.

Figs, *C.* 322.

Fish Stock Titling, 9000.

Fustick, *C.* 4.

Galbanum, *l.* 242.

Gauls, *C.* 1604.

Gallingal, *l.* 1000.

Gumanimæ, *l.* 10950.

Tragant, *l.* 2550.

Lack, *l.* 100.

Guttæ, *l.* 50.

Ginger dry, *C.* 100.

Green, *l.* 3502.

Gingams, *Parcels* 39.

Hides red, *Parcels* 1444.

Cow, 5351.

Guiny, 300.

Harfords, *Ells* 1500.

206 *A COLLECTION for Improvement*

Hemp, *C.* 40.
 Herba Longes, 200.
 Incle, *l.* 89.
 Wrought, *doz.* 12.
 Indigo, *l.* 6238.
 Iron, *Tuns* 77. *C.* 50.
 Iron Spanish, *Tun* 9. and a half.
 Lawns Sletia, *Parcels* 1222.
 Linen, *Ells* 3247.
 Scotch, *Yards* 100.
 German, *Ells* 88284.
 Litmus, *l.* 40.
 Lapis Tutia, *C.* 25.
 Lignum Vita, *C.* 20.
 Musk, *Oz.* 1180.
 Cod, *doz.* 160.
 Mace, *l.* 32.
 Mohair, 1028.
 Muslin, *Parcels* 8.
 Nails, *C.* 8.
 Neckcloths Callico, 600.
 Neckcloths 2000.
 Cloths fingle, 240.
 Nilles, *Parcels* 320.
 Nehallowes, *parcels* 42.
 Nux Vomica, *l.* 1100.
 Nutmegs, *l.* 156.
 Oil, *Tun* 12. and a quarter.
 Ozenbrigs, *Ells* 31788.
 Oculus India, *l.* 1800.
 Opium, *l.* 227.
 Oil Olive, *Gal.* 216.
 Sallad, *Gal.* 12.
 Olibanum, *C.* 112.
 Pintadoes, 130.
 Pepper, *l.* 16470.
 Pallampores, *parcels* 5.

Penassies,

of HUSBANDRY *and* TRADE. 207

- Penaffes, *parcels* 65.
Polium Montanum, *l.* 500.
Plates double and fingle, 2300.
Raifins, *C.* 102.
Rice, *C.* 73.
Romals, *parcels* 535.
Rangoes, *parcels* 200.
Rhubarb, *l.* 214.
Sugar White, *C.* 299.
Brown, *C.* 6559.
Silk Perfian, *parcels* 1.
 Raw, *l.* 22438.
 Wrought, *l.* 1033.
 Wrought with Silver and Gold, *parcels* 6.
Soap Hard, *C.* 119.
Soap, *C.* 46.
Scammony, *l.* 604.
Sanguis Draconis, *l.* 252.
Shell Tortois, 972.
Sal Armoniacum, *l.* 500.
Stick lack, *C.* 80.
Senna, *l.* 450.
Seed Pearl, *Oz.* 200
 Worm, *l.* 168.
 Cummin, *l.* 10.
 Carroway, *l.* 56.
 Fennel, *l.* 14.
 Annis, *C.* 56.
Stuffs Guinea, *parcels* 50.
Silver Quick, *l.* 374.
Sumach, *C.* 7.
Skins Bear, 171.
 Fox, 462.
 Mincks, 406.
 Otters, 207.
 Gray, 1080.
 Vissers, 260.

Cat,

208 *A COLLECTION for Improvement*

- Cat, 200.
 Woolf, 97.
 Racoon, 77.
 Timber, 6.
 Beaver, 600.
 Thread Sisters, *l.* 6.
 Brown, *l.* 103.
 Twine, *C.* 12.
 Tobacco Virginia, *l.* 75697.
 Bermudas, *l.* 930.
 Tykes, 18.
 Tea, *l.* 250.
 Tar, *Last 5. Bar.* 340.
 Termerick, *l.* 7986.
 Wine Rhenish, *Fats* 32.
 Port, *Tun* 24. *Hog shead* 2.
 Madera, *Pipes* 4. *Hog shead* 1.
 Canary, *Pipes* 18.
 Sherry, *Buts* 28.
 Alicant, *Buts* 28.
 Wares China, *par.* 5.
 Wax Bees, *C.* 231.
 Wood Log, *Tun* 76.
 Wood Bafelet, *Tun* 17.
 Box, *Tun* 14. *C.* 4.
 Red, *C.* 5.
 Wyre Latin, *C.* 5.
 Steel, *l.* 450.
 Wool Spanish, *Bags* 54.
 Cotton, *l.* 74162.
 Yarn Mohair, *Sacks* 7. and *l.* 74162.
 Cotton, *l.* 86239.

Ships Inward,

From

A Msterdam, 3 Ships.

Alicant, 1.

Barbadoes, 3.

Bruges, 3.

Bremen, 1.

Belfast, 1.

Canaries, 2.

Cowes, 1.

Cadiz and Leghorn, 1.

Cadiz, 2.

Dunkirk, 3.

Dort, 2.

Downs, 1.

Dublin, 1.

Diep, 3.

Figara, 1.

France, 1.

Friezland, 1.

Gallicia, 1.

Gottenbergh, 1.

Havre de Grace, 1.

Hamburgh, 1.

Jamaica, 1.

Lisbon, 2.

Limerick, 1.

Malaga, 2.

Middleburgh, 1.

Madera, 1.

New York, 1.

Norway, 1.

New-England, 1.

Ostend, 2.

Oporto, 26.

Rotterdam, 7.

Sevil, 1.

Vol. IV.

P

Scotland

210 *A* COLLECTION for Improvement

Scotland, 1.
St. Sebastian, 1.
Scanderoon, 1.
Tavilla, 1.
Virginia, 1.
In all, Ships 93.

Ships Outward.

A Msterdam, 3.
Bourdeaux, 3.
Barbadoes, 4.
Bruges, 1.
France, 2.
Farro, 1.
Flanders, 1.
Gottenbergh, 4.
Galicia, 1.
Guinea, 5.
Guernsey, 1.
Gaunt, 2.
Hamburgh, 3.
Ireland, 2.
Jamaica, 2.
Lisbon, 2.
Middleburgh, 1.
Maesland Sluice, 1.
Mevis, 2.
Oporto, 3.
Rotterdam, 3.
Rouen, 3.
Sound, 1.
St. Laurence, 2.
Scotland, 6.
Streights, 1.
St. Malo's, 1.
Zealand, 1.
In all, Ships 62.

NUMB.

A token for ship-boys, or plain-sailing made more plain and short than usually, in three particular methods.

1. **B**Y ordinary numbers, so plain and easy, that by two little *tables*, that may without difficulty be comprehended in a small *octavo* leaf, a very novice in *arithmetick* may with much speed and exactness find the particular *differences* of *latitudes*, and *departures* of any *courses* and *distances*, together with the general (or total) *distance of latitude*, the *departure*, *course*, and *distance* belonging to any *traverse*, without any other *traverse table*, *book* or *instrument* whatsoever.

2. By *artificial signs*, *tangents*, and *logarithms* of numbers, doing all the same work in a new method, together with the reduction of *leagues* and *miles* of *departure* into *degrees* and *minutes* of *longitude*.

3. By *compasses* and a *cheap scale*, by help whereof, and a few *counters*, one that cannot read may be taught to do most of the same work in a *mechanical way*, with much speed and competent exactness.

In a letter to the *publisher* from *Adam Martindale*, a lover of the *mathematicks*.

To Mr. *John Houghton*, Fellow of the Royal Society.

Honoured Sir,

HAVING done some little at your request towards the improvement of husbandry, I was sorry to think I could no way assist in order to the advancement of trade: but considering with my self, that as navigation is the soul of trading with all transmarine people, so skilful seamen, in a due proportion for number and quality, are the bones and sinews, as moneyed merchants are the flesh and blood, and well-rigged men of war, the trunk and tearing teeth of this great elephant; I made account that trading might well gain some little by it, if plain-sailing, which is the seamens *A. B. C.* were rendered more welcome to our fry of youngsters by such methods as these papers exhibit, being all designed to be cheap, short, sound and plain: as to the two former, cheapness and shortness, I appeal to any man that hath eyes and brains; for the third, to all artists; and for the fourth, to such of them as will take the pains to try them practically in the instruction of youth; and in the mean time to my scholars, whereof some are (for their time) notable seamen, others in a way in order thereunto; one of them being a person of honour, and resolved to serve his King and country in maritime affairs (in due time) with his notable brisk parts and spirit; being by his occasions summoned up to London before I had time to prepare him sufficiently, writes thus to me.

S I R,

S I R,

I would not omit the first opportunity to give you thanks for your care in instructing me in so good a method; and I do not question, if I had stayed, but that I might have received as much advantage from you as I can in this place, for I find your method, according to my apprehension, to be more profitable, &c.

And yet this young nobleman was instructed by me only in the second method, which of the three has the most of difficulty, and then more than now: for neither the first nor third, nor the directive figures and letters in the first table upon every point, nor the rules referring to them (which belong to all those methods equally) were before our parting so much as thought of by me. But having had experience for these many years of the logarithmetical way, and being assured that the other two agree with it, I have sent you all together, hoping they may be of more publick advantage (if carefully printed) than any mathematical contrivance of mine that ever yet saw the light: and however, desiring to be furnished (without the pains of transcription) with some copies for the use of the friends and scholars of

S I R,

Your humble servant,

A. Martindale.

Concerning Plain-Sailing.

WHEN a ship sails from any one place to another, four things are considerable, whereof two are given, the other two required.

The given things are,

1. The distance sailed in leagues or miles, found by the log-line, or otherwise.

2. The course answering to some rhomb or point of the compass (or part thereof) as when we say it sailed South South East 51 leagues; 51 is the distance, and S. S. E. is the course. Where note, that though rhombs be spiral lines upon the globe, winding by little and little towards the poles; in such short distances as we are concerned in, the deviation is so little from strait lines, that we consider them as if they were perfectly strait.

The things required, are;

1. The difference of latitude, that is, how far in any measures, as miles, leagues, &c. the ship is gotten more North or South than the place is from which she set sail; for which, throughout this paper this is the mark, D. L.

2. The departure, that is, how far the ship is more East or West than the place whence she sailed, reckoned by the same measures that the D. L. is; the characters for departure being D E. or Dep.

Concerning which take these observations.

1. If a ship sails directly North or South, the whole distance sailed is D. L. without any departure.

2. If

of HUSBANDRY and TRADE. 215

2. If it sail full *East* or *West*, the whole distance sailed is DE. without any D. L.

3. If it sail *North-East*, *South-East*, *North-West*, or *South-West*, the D. L. and DE. are equal, and each of them less than the distance.

4. In all other courses, save those eight aforementioned, the D. L. and DE. are unequal, and each of them (considered singly) less than the distance.

5. If its course be nearer to the *North* or *South* point than either the *East* or *West*, the D. L. is greater than the DE. but contrarily, if the course be nearer the *East* or *West* point than either *North* or *South*, the *Dep.* is greater than the D. L.

Which last note is of singular use, not only to find out D. L. and *Dep.* but also courses and distances in some cases, as will hereafter appear plainly.

In the interim take notice of these following tables.

A table of Rhombs or Points of the Compass.

North.			
N. by W. 1.	D L. N. DE. W.	N. by E. 1.	D L. N. Dep. E.
N. N. W. 2.	D L. N. DE. W.	N. N. E. 2.	D L. N. DE. E.
N. W. by N. 3.	D L. N. DE. W.	N. E. by N. 3.	D L. N. DE. E.
N. W. 4.	D L. N. = DE. W.	N. E. 4.	D L. N. = Dep. E.
N. W. by W. 3.	DE. W. D L. N.	N. E. by E. 3.	DE. E. D L. N.
W. N. W. 2.	DE. W. D L. N.	E. N. E. 2.	DE. E. D L. N.
W. by N. 1.	DE. W. D L. N.	E. by N. 1.	Dep. E. D L. N.
West. ————— A		————— East	
W. by S. 1.	Dep. W. D L. S.	E. by S. 1.	DE. E. D L. S.
W. S. W. 2.	DE. W. D L. S.	E. S. E. 2.	DE. E. D L. S.
S. W. by W. 3.	DE. W. D L. S.	S. E. by E. 3.	DE. E. D L. S.
S. W. 4.	DE. W. = D L. S.	S. E. 4.	DE. E. = D L. S.
S. W. by S. 3.	D L. S. DE. W.	S. E. by S. 3.	D L. S. DE. E.
S. S. W. 2.	D L. S. DE. W.	S. S. E. 2.	D L. S. DE. E.
S. by W. 1.	D L. S. Dep. W.	S. by E. 1.	D L. S. DE. E.

South.

In this table the *point of intersection* near *A.* represents the place whence the *ship sailed*; the *downright line* from *North* to *South*, the *meridian* of that place; and the *traverse line* from *North* to *East* denotes that parallel to the *equinoctial*, that the place whence she *sailed* is situate under. The extremities of the *lines* point out the four *cardinal points* or *rhombs* of the *compass*, *East*, *West*, *North* and *South*: the other intermediate *points* being named in order as they stand on the *mariner's compass*; the main use of which *table* is this;

Knowing the former *marks* for *difference of latitude* and *departure*, and that *E.* stands for *East*, *W.* *West*, *N.* *North*, and *S.* *South*, find the *given course* in the *table*, and that which followeth its name, satisfieth you of three things,

1. How many *points* (1, 2, 3, or 4.) your *course* is from the next *cardinal point*, by the figure immediately following.

2. Whether the *D. L.* be *N.* or *S.* and the *DE.* whether *E.* or *W.* by the characters next after the *figure*.

3. Whether *D. L.* or *DE.* be greater by their order, for the greater is ever named first, and the less after. *As in example.*

If the *course* be *S. E.* by *E.* by looking' it in the *table* we find it to be three *points* from the next *cardinal rhomb*, viz. *E.* for so the *figure 3* next after its name in the *table* tells you: the *DE.* is *E.* and the *D. L.* is *S.* and the *DE.* is greater than the *D. L.* as the order wherein they are set down shews.

II. Table of Sines, Co-sines, Tangents, &c. fitted to every quarter of a point, from 1 quarter to 4 points (inclusive) which are all that we need in this method of working.

The First Part of the Table.

R	Q D L. & D E for 1			A.N.
	1	488	9988	409
	2	978	9952	983
	3	1466	9891	1482
1	0	1051	9808	1089
1	1	2427	9701	2502
1	2	2902	9570	3032
1	3	3368	9416	3577
2	0	3827	9230	4141
2	1	4274	9041	4727
2	2	4713	8820	5344
2	3	5141	8577	5993
2	0	5556	8314	6682
3	1	5955	8033	7412
3	2	6343	7731	8204
3	3	6715	7410	9062
4	0	7071	7071	10000

The

The Second Part of the Table.

D	M	Ar. Sines.	Ar. Cofines	Ar. Tangen	Ar. Cotang.
2	48	8. 688892	9. 999481	8. 689381	11. 310619
5	37	8. 990660	9. 997910	8. 992750	11. 007250
8	26	9. 166307	9. 995278	9. 171029	10. 828971
11	15	9. 290236	9. 991574	9. 298662	10. 701338
14	03	9. 385192	9. 986809	9. 398383	10. 601617
16	52	9. 462616	9. 980904	9. 481712	10. 518288
19	41	9. 527400	9. 973852	9. 553548	10. 446452
22	30	9. 582840	9. 965615	9. 617224	10. 382776
25	18	9. 630792	9. 956208	9. 674584	10. 325416
28	07	9. 673268	9. 945463	9. 727805	10. 272195
30	56	9. 710997	9. 933369	9. 777628	10. 222372
33	45	9. 744739	9. 919846	9. 824892	10. 175108
36	33	9. 774899	9. 904898	9. 870001	10. 129999
39	22	9. 802282	9. 888237	9. 914044	10. 085956
42	11	9. 827049	9. 869818	9. 957231	10. 042769
45	00	9. 849485	9. 849481	10. 000000	10. 000000

This *table* is divided into two parts, whereof the first part is all that I shall commend to the present consideration of my young *seaman*, that understands nothing of *logarithms*, but intend to speak a little for the use of them that are versed in such things, towards the end of this short discourse.

In the first part of the *table* are only five small *columns*; the first and second are marked at the top, *R.* for *rhombs*, and *Q.* for *quarters*, where they begin with 1 *Q.* and with 4 *R.* For though the famous *Sturmy* (as I remember) affirmeth, that never any man steered nearer than to half a point; yet because *quarters* are mentioned in *traverses*, I have made the *table* twice
so

so large as it needed to have been, upon that *supposition*, that all seeming ground of complaint, for want of *exactness*, might be prevented. In the third and fourth *columns* you have the *difference of latitude* and *departure* answering to one single *league* or *mile*, or other measure upon every *point*, and *quarter point* in the *table*; and in the fifth, noted at the head with *A. N.* (that is, *angular numbers*) you have such numbers as will readily help you to find the *angle* of the *course* (reckoned from the next *cardinal point*, *E. W. N.* or *S.*) the *D. L.* and *DE.* being given. I chose rather to give these plain names to those *columns*, which my younger *seaman* is liker to understand, than to tell him of *natural sines*, *co-sines* and *tangents*, and how these agree and disagree with such as he may find in some *mathematical books*, which to him would be perfect *gibberish*. Let us then without any more ado come to the uses; and the first great one is as followeth:

1. *Part.* Having the *course* and *distance sailed*, to find *D. L.* and *D E.* look the *course* given in the former *table*, and by direction of the *figure* immediately following its name, find it in the first (or first and second) *column* of the second *table*, and taking out the numbers over against it in the third and fourth *column*, multiply them severally by the *distance given*, and from both *products* separate four figures towards the right hand, with a prick of your pen, a short line, or any other *distinction*; so shall those *products* be one the *D. L.* and the other *DE.* answerable to that *course*, accounted the number before the pricks or lines to be whole numbers, and those after them *decimal parts*.

But

220 A COLLECTION for Improvement

But then to know whether is D. L. and which the D. E. and whether D. L. be N. or S. and D. E. E. or W. the viewing again of your *course*, that which follows it in the same line, must inform you.

Examples to make this plain.

Example 1. If a ship sail *West-North-West* 43 leagues or miles, I find in the first table, that *W. N. W.* is attended by the figure 2. (shewing it is only two points from the next cardinal point, viz. *W.*) and looking 2 rhombs in the first column of the second table, I find over against it 3827 and 9239 in the third and fourth column, which being multiplied severally by 43 (the distance given,) and four figures cast off towards the right hand, they give 16.4561 and 39.7277. whereof one must signify D. L. and the other Dep. And viewing again my *course* in the first table, I find the D. E. is W. and D. L. N. and that the D. E. is greater than D. L. (being first named in that *course*) and therefore I mark 39.7277 for Dep. W. and 16.4561 for D. L. N. as in the margin.

3827	9239
43	43
<hr/>	<hr/>
11481	27717
15308	36956
<hr/>	<hr/>
16.4561	39.7277
D.L.N.	DE. W.

Example 2. Suppose the second *course* be W. by S. 51 leagues, the figures following its name in the first table direct me to 1 in the first column of the second table, and that to 1951 and 9808

of HUSBANDRY and TRADE. 221

9808 in the third and fourth; which being used as in the last *example*; that is multiplied by the *distance*, and the *rhomb* in the first *table* again consulted, I find the D. L. to be 9.9501 S. and the D E. 50.0208 W.

1951	9808
51	51
<hr/>	<hr/>
1951	9808
9755	49040
<hr/>	<hr/>
9.9501	50.0208
D.L. S.	DE. W.

Example 3. Suppose the third *course* be directly N. 35 leagues. Then by the first *rule* before the first *table* 35, will be all North D. L. and no *departure*, which I thus mark.

35 D. L. N. o. D E.

Example 4. Suppose she be carried by a *current* directly East 29 leagues. Then by the second *rule* before the first *table*, the D. L. will be o. and the *Dep.* 29. E. as here I have set it in the *margin*.

o. D. L. 29. D E. E.

Example 5. Suppose she bears up N. W. by W. N. 111 leagues, I find N. W. by W. (by the first *table*) to be three *rhombs* distant from the next *cardinal point*, viz. W. and $\frac{1}{2}$ point more N. makes it 3 *rhombs* and 2 *quarters*, which sought in the first and second *column* of the second *table*, directs me to 6343 and 7731, which severally multiplied, gives 70.4073 and 85.8141. And now consulting my

6343	7731
111	111
<hr/>	<hr/>
6343	7731
6343	7731
6343	7731
<hr/>	<hr/>
70.4073	85.8141
D.L. N.	DE. W.

table,

222 *A COLLECTION for Improvement*

table, I find that N. W. by W. is but three points from the *West*, consequently N. W. by W. $\frac{1}{2}$ N. can be but three points two quarters, which must needs be nearer to W. than N. (N. W. which is four points, being the exact middle) and consequently by the last rule before the first table 70. 4073 denotes D.L. N. and 85. 8141 D.E. W.

Example 6. Then supposing she sails *South-West* $\frac{3}{4}$, *West* 19 leagues, finding S. W. in the first table, and 4 following it (shewing that it is equally distant four points both from S. and W.) I conclude that $\frac{3}{4}$ more to the westward, being abated from 4 points, her course being only 3 points (or rhombs) and $\frac{1}{4}$ from the *West*, whereas it is 4 rhombs and 3 quarters from the *South*; and this tells me beforehand, that the departure *West* will be greater the D.L. S. and to try what they will be, I knowing the numbers 5955, and 8033, to be answerable to 3 points, 1 quarter in the second table, multiply them by 19. and find their results to be

5955.	8033.
19.	19
<hr/>	

11, 3145 D. L. S. and 15. 2627 D. W.

Example 7. Suppose she be driven by a contrary wind, (notwithstanding endeavours to bear up against it) almost a quite contrary course, viz. N. E. by N. $\frac{1}{4}$ N. 11 leagues. It appears by the first table, by inspection, that N. E. by E. is but 3 points from N. and therefore $\frac{1}{4}$ nearer to the N. brings us within 2 points and 3 quarters; and over against 2 rhombs 3 quarters

5. 3595.	72297.
5955.	8033.
<hr/>	
113145.	15.2627
D.L. S. D.E. W.	

3 quarters in the second table,
I find 5141. and 8577. which
upon multiplication, give me
5.6551 DE. and 9.4347 D.L.
N. comparing the products with
the last rule before the first ta-
ble. Having thus shewed in all
necessary varieties, how the
D.L. and D.E. may be truly
found of every single course in

5141.	8577.
II.	II.
<hr/>	
5141.	8577.
5141.	8577.
<hr/>	
5.655.	9.4347.
DE.	E. DL.N.

a traverse; the next work must be to bring them
all into one, that the D. L. and D. E. of the
whole traverse may appear: to effect which,
make a table with seven columns, in the first
whereof put letters representing the particular
places, where and whither the ship sailed; in
the second, the courses; in the third, the distan-
ces; and in the other four, noted with E. W.
N. S. the D. Ls. with Deps. found, that is E.
D.E. in the E. Col. W. D.E. in the W. Col.
and so likewise N. D.L. under N. and S. D. L.
under S.

[But observe by the way, that you need not
to put down all the decimal fractions (for such
they be) which you were directed to separate
from the rest of your products by a prick or short
line; but only two of them after every prick,
for the other two are very inconsiderable.]

Having thus set them in their due order, sum
up every column, and observing whether the
sum of the East or West departure is less, sub-
tract it from the greater; and do the like by
the sums of the N. and S. dist. of latitudes: so
shall their differences or remainders shew the
D.E. and D.L. of the whole traverse, as appears
in this example, being the computation of the 7
courses beforementioned.

Places.

224 A COLLECTION for Improvement

Places.	Courses.	Leag.				
1 From A. to B.	W. N. W.	43	E.	W.	N.	S.
2 From B. to C.	W. by S.	51		39. 72	16. 45	09. 95
3 From C. to D.	N.	35	00. 00	00. 00	35. 00	
4 From D. to E.	E.	29	29 00		00. 00	00. 00
5 From E. to F.	N.W. by W. $\frac{1}{2}$ N.	111		85. 81	70. 40	
6 From F. to G.	S. W. $\frac{3}{4}$ W.	19		15. 26		31. 31
				190. 81	09. 43	21. 26
7 From G. to H.	N.E. by E. $\frac{1}{4}$ E.	11	50. 65	34. 65	131. 28	
			156. 56		21. 26	
			34. 65		110. 02	

Here it is apparent, that in the whole *traverse* the ship is more *northerly* by more than 110 *leagues* than the place A. and more to the *West* by 156 *leagues* and more.

Note, That in all these four *columns* we sum up the *leagues* and *parts*, as if they were all whole numbers, and *subtract* likewise as if they were so, only keeping *leagues* and *parts* distinct by pricks: and if any one that knows not how to do it, be desirous to understand how to turn such parts as these into quarters of leagues, or miles (if the measure be given in miles) let him *multiply* any such *decimal parts* by four; and if the *product* consist of any more *figures*, than those parts did before they were so multiplied, the first figure in the product shews the number of quarters;

quarters; but if not, then the *decimals* contained no quarter in them. Thus the sum of the *East column* being thirty four *leagues*, and sixty five parts of a league, if you multiply sixty five by four, the product will be 260, which being a number of three figures (reckoning the *cypher*, as in these cases we always must) whereas 65, before it was multiplied, consisted only of two; the first figure of 260, viz. 2, shews that two quarters were contained in the 65; but in the differences remaining by subtraction, 16 belonging to 156 and .02 belonging to 110, there is no quarter contained; for 16 multiplied by 4, is but 64, and .02 multiplied by 4, is but .08, neither of which consist of any more figures than they did before they were multiplied. In the same manner *decimal parts* of *miles* may be brought into *furlongs*, being multiplied by 8, and *leagues* into *furlongs* by multiplying them by 24.

2. The next work that this table is useful for is to direct to find the course, the D. L. and DE. being given, which may be thus done:

Annex four cyphers to the *lesser* of them, and divide by the *greater*; then seek the *quotient* or next numbers you can find to it in the *fifth column* of the *second table*, and over against it in the *first*, or first or second *column*, you have the distance of the course from the next *cardinal point*. Suppose then I would know upon what *rumb* or *quarter* the course is from the place A. whence the ship set sail, to the place H. where she is; and consequently the *course* leading back again from H to A. I know it is nearest to the W. point of all the *cardinal points*; for the *Dep.* is not only W. but greater than the D. L. N. Taking this for certain, I annex four *cyphers* to

226 A COLLECTION for Improvement

110.02 the difference of latitude, whereby it becomes 110.020000, and this being divided by 156.16, the DE. the *quotient* is 7109, for which look in the fifth *column* of the second *table*, and finding not it, but 6682 (which of all in that column is next to it) over against 3 *rhombs*, I conclude the course is more than 3 *rhombs* from the W. point towards the N. which is N. W. by W. And then to know the course back again, if you be ignorant of it, and have neither *compass*, *traverse-table* nor *tide-table*, to find the *point* directly opposite to that you last found, nor judgment to find it in the *first table* of this paper, take this plain general rule, which a child of seven years old may be made easily to understand: turn the simple names, whereof your new-found *point* is compounded, into their opposites, that is E. into W. and W. into E. and so likewise turning N. into S. and S. into N. so shall you have the opposite point. So here turning N. into S. and W. twice into E. you have the opposite point, *viz.* S. E. by E. which in the *first table* you will find to be just so many points from E. towards S. as N. W. by W. is from W. towards the N.

3. Having now the D. L. and DE. of the whole *traverse* from A. to H. and the courses leading betwixt them, *viz.* N. W. by W. from A. to H. and S. E. by E. back again from H. to A. The next work is to find their distance, which is easily done thus, by this general rule.

Having observed whether the DE. or D. L. found, is less, take notice what *decimal places* belong to that less number, and make them up to four by annexing cyphers, if there be not four places already; then divide by the number
in

in the *third column* of the *second table* over against the *course*.

So (for example) in the case before us, D.L. 110.02 being the less for the DE. is 156.16) and having only two places of *decimals*, (*viz.* 02) I annex two *cyphers*, and dividing 110.0200 by 5556 which I find in the *third column* over against the *course*, (which is 3 *rhombs*) my *quotient* for the *distance* is 198 L. as here appears.

$$\begin{array}{r}
 \text{Leagues} \\
 5556 \overline{) 110.0200} (198 \\
 \underline{5556} \\
 54460 \\
 \underline{50004} \\
 44560 \\
 \underline{44448} \\
 112
 \end{array}$$

And this is so near the exact truth, that I little question but that he which trusteth to large *traverse-tables* for the DE. and D.L.

then finds out the *course* and *distance*, either by *Gunter's lines*, or by *trigonometry*, especially if he takes his *logarithms* and *artificial sines*, *cosines* and *tangents*, only of five places, besides their *index* (as is very usual) shall ordinarily fail of coming so near. Thus much for the *first part* of the *table*.

The second part is intended for such as understand the nature of *logarithms*, and *artificial sines* and *tangents*; and therefore I shall be brief in my notes concerning it, being these.

1. Here are all the *artificial sines*, *cosines*, *tangents*, and *cotangents*, with the *degrees* and *minutes* of the *quadrant* prefixed to them, answering to all *points* and *quarters*, from one *quarter* to four *points*, which if the *artist* will but examine once by a good *table* to correct the errors, if any should be committed by transcription, or Printing, he hath all the *artificial sines*, *cosines*,

228 A COLLECTION for Improvement

tangents and *cotangents*, before him in this little compass, that there is any occasion for in working a *traverse*; yea, the *cotangents* might be spared, save to make the *table* more complete and useful to other ends.

2. According to this *short method* there is no occasion to mention any more than four *points*; no course being more than so from the next *cardinal point*.

3. Whereas youths are oft fore puzzled in their conceptions about their *rules*, in the common way of teaching, *viz.*

As *radius* to the *distance*; so $\left\{ \begin{array}{l} \text{Cosine} \\ \text{Sine} \end{array} \right\}$ to $\left\{ \begin{array}{l} \text{D.L.} \\ \text{DE.} \end{array} \right\}$
is the

Not easily apprehending (as I have sufficient experience) when and why the D.L. and DE. must be taken as the work produceth them in some cases; and when, and for what reason they must be counter-changed in others. The first *table*, with the *rule* next before it, and the *practice* upon them hitherto (which is as applicable to the way of working, as the former) makes that case so plain, that without supine negligence, an error that way can scarcely be committed.

4. To find the D.L. and DE. (the course and distance being given, and former *rules* understood) add to the *artificial sine* of the *course*, the *log.* of the *distance*, and from their sum, either *subtract* 10.000000, or cast 10. from its *index*; do the like also by the *cosine*, so shall the *remainders* of those sums be the *logarithms* of the D.L. and DE. which that you may the better understand, and see the agreement of this work with the former, I shall go again over five of the seven examples foregoing; for two of them, *viz.* the third and fourth need not
2 farther

of HUSBANDRY and TRADE. 229

farther consideration, till they come to be placed in a table.

Example 1. W.N.W. 43 Leagues.

Sine 22. d. 30. m. 9. 582840	Cofine 22. d. 30. m. 9. 965615
Log. 43. 1. 633468	Log. 43. 1. 633468
DL. N. 16. 45. 1. 216308	DE. W. 39. 72. 1. 5990 ⁹ 3

Example 2. W. by S. 51 Leagues.

Sine 11. d. 15. m. 9. 290236	Cofine 11. 15. 9. 991574
Log. 51. 1. 707570	Log. 51. 1. 707570
DL. S. 9. 95 0. 997806	DE. W. 50. 02. 1. 699144

Example 5. N. W. by W. $\frac{1}{2}$ N. 111 Leagues.

Sine 39. 22. 9. 802282	Cofine 30. d. 11. m. 9. 888237
Log. 11. 111. 2. 045323	Log. 111. 2. 045323
DL. N. 70. 40. 1. 847605	DE. W. 85. 81. 1. 933560

Example 6. S. W. $\frac{3}{4}$ W. 19 Leagues.

Sine 36. d. 33. m. 9. 774899	Cof. 36. d. 33. m. 9. 204898
Log. 19. 1. 278753	Log. 19. 1. 278752
DL. S. 11. 31. 1. 053652	DE. W. 15. 26. 1. 183651

Example 7. N.E by N. $\frac{1}{4}$ N. 11 Leagues.

Sine 30. d. 56. m. 9. 710997	Cofine 30. 36. 9. 933369
Log. 11. 1. 041393	1. 041393
DE. E. 5. 65. 0. 752390	D L. N. 9. 43. 0. 974762

Thus you see here there is a perfect agreement between this method and the former, and consequently if these examples, together with those two that needed no working, were made into a

230. A COLLECTION for Improvement

table, and summed up, and subtraction made as before, the D.L. and DE. of the whole traverse would be as before, viz. 156. 16 L. DE. W. and 110.02. L.D.L.N.

5. Having thus obtained the DE. and D.L. this is the rule to find the course, as the greater to the less, so is the radius to the tangent of the course.

Log. 110.02.2.041471
Radius. 10.000000

12.041471

So adding radius to the log. of 110.02. and subtracting thence the log. of 156. 16. and

Log. 156.16. 2.193569

T. 9.847902

the remainder being 9.847902. being sought amongst the tangents in the second table, I cannot find it exactly, but I see it is more than 9.824892. which answereth to the 33. d. 45. m. or 3 rhombs, and less than 9.870001, which is over against 36. d. 33. m. or 3 rhombs, and 1 quarter; so I take it for 3 rhombs to which it is near, though somewhat more, and conclude it to be about N. W. by W.

6. Having thus the course and the number 110.02, to which it answereth, the distance may be found by this rule.

As the sine of the course is to the lesser number, (whether D.L. or DE.) so is radius to the distance: I therefore add rad. to the log. of the less number 110.02. and the sine of the course, viz. 33 d. 45 m. or 3 rhombs being then subtracted, the difference is the log. of the distance, viz. 198, as here is evident.

Log. 110.02.2.041471
Radius 10.000000

12.041471

S. 33. d. 45. m. 9.744739

Thus the agreement Log. of 198. 2. 296732 of

of these two methods, *per omnia*, is easy to be perceived ; but my brisk young artist, that understands *logarithmetical operations*, will perhaps take it ill that I teach him to do nothing by his *logarithm-book*, that a junior in arithmetick cannot do as truly without (if not as quickly) by the help of this short paper only. I will therefore gratify him, by shewing how his D. L. and DE. may be turned into *degrees* and *minutes* of *latitude* and *longitude*, according to Mr. Philips his way (*Mathem. Man.* p. 119, 120.) for the main, though in some small circumstances differing, but in nothing dissenting.

1. Then to turn the D. L. into *degrees* and *minutes* of *latitude* is very easy, for multiplying it by three, and *dividing* by sixty, the *quotient* gives *degrees*, and the *remainder minutes* (and if it had been given in miles (according to his supposition) only

110

dividing by sixty had done the business) by which rule, the D. L.

3

110 leagues being multiplied by 60) 330 (5
three, and divided by sixty, gives 300
five *degrees*, thirty *minutes*, as here ;

and this holds true under any *meridian* all the world over. 30

But care must be taken, that on this side of the *equator* D. L. N. being brought into *degrees* and *minutes*, be added to the *latitude* of the *place* where the *ship sailed*, and D. L. S. substracted from it : but quite contrary beyond the *equator*, for there D. L. S. must be added, and D. L. N. substracted.

2. The departure being also brought into *degrees* and *minutes* after the same way, is 7. d. 48. m. and if this were at the *equator*, the account

232 A COLLECTION for Improvement

count were very near the truth ; but the farther off the equator, the fewer miles make a degree ; and therefore when we are at any considerable distance from it, we must turn our leagues of DE. into miles, as before, by tripling them (whereby 156 leagues become 468 miles) but must not turn them into *deg.* and *min.* till they be certified ; concerning which there are two cases.

1. When the ship sail in a pure parallel course, E. or W. (as in the fourth example foregoing) making no D. L. at all ; in this case this is the rule.

As the *cosine* of the *latitude* to *radius* ; So the *miles* of *departure* to the *minutes* of *longitude* in that *latitude*. So if that had been the case, and the *lat.* (for example) had been 50 d. 00 min. I must have added the *log.* of 468 miles to *radius*, and subtracted from their sum, the *cosine* of 50 d. (which is the *sine* of 40.) So their difference or remainder would have been the *log.*

10. 9000000

2. 670246

12. 670246

9. 808067

Log. 782. 2. 862179

of the minutes, as here it is manifest they would have been 728 minutes, that is by reduction 12. d. 8. m. But this is done rather to make that case plain, than to suit our own.

2. When the places, from whence, and to which the ship hath passed (as in our traverse from A. to H.) are of different latitudes, as well as longitudes : To understand which case fully, let us suppose A. to be in the *lat.* 50 d. on this side the equator (that is of N. L.) and consequently

quently H.) whose difference of *latitude* from A. is 5 d. 30 m. to have *northern latitude* 55 d. 30 m. and the miles of departure to be as before computed 468. Now these miles must not be reckoned in the *latitude* of A. nor yet in the *latitude* of H. but in the *middle latitude* between them, which by dividing the D. L. 5 d. 30 m. into two equal parts (whereof each is 2 d. 45 m.) and adding one of them to *lat.* 50. d. is quickly found to be 52 d. 45 m. with which we may make our proportions in the same manner, as in a parallel course with its own latitude thus;

As *cos.* 52. 45. to *radius*; so 468 miles to their proportionable minutes in the *latitude* 55 d. 30 m. so adding the *log.* of 468 (as I did formerly) to *radius*, and from their sum subtracting the *cosine* of 52 d. 45 m. (which is the *sine* of 37 d. 15 m.) the difference is 2.888280 the *log.* of 773 m. which being divided by sixty, gives 12 deg. 53 minutes; all which is manifest by the work in the margin.

$$\begin{array}{r}
 R. 10. 000000 \\
 L, 468. 2. 670246 \\
 \hline
 12. 670246 \\
 C. 52. 45. 9. 781966 \\
 \hline
 L. 773. 2. 888280 \\
 60) 773 (12 \\
 60 \\
 \hline
 173 \\
 120 \\
 \hline
 53
 \end{array}$$

Therefore I conclude that the ship, when she is at H. is 5 degrees, 30 minutes in *latitude* towards the North, and 12 degrees and 53 minutes in *longitude* towards the West, more than when she was at A. according to these hypotheses.

I shall

234 *A COLLECTION for Improvement*

I shall conclude all with this one *crotchet* more, which is, that I believe such a mathematical instrument-maker as Mr. *Atkinson*, who is both an able mathematician, and an ingenious workman, might easily contrive a scale that would be very cheap, and yet so plain, that any ordinary capacity might easily conceive so well of it, as by the help thereof, and a pair of ordinary compasses, to perform most of the work in this paper truly enough for ordinary use, though he that so used it had little or no judgment at all in *arithmetick*; yea, possibly (with a little teaching) though he could neither write nor read; and this with very much speed and ease. I pretend not to skill in that trade, but shall adventure however to give some hints, which skilful persons may farther improve.

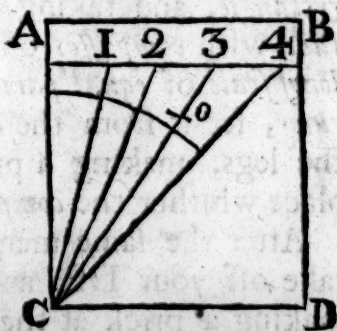
Let there be a *diagonal scale* of a hundred in an inch, made in the usual manner, only let there be a space of an inch and a quarter left void at the higher end above the *diagonalised inch*, for a little *quadrate* of an inch every way, and a small row of figures above it; as I have endeavoured (though rudely) to express it, in the *diagram* A.B.C.D. which is divided by a *diagonal line* from C. to B. and upon the center C. an *arch* reaching between the lines C A. and C B. divided into four *equal parts* by *points*, through which the *lines* 1, 2, and 3, are drawn, which together with the *diagonal*, represent 4 *rhombs*, reckoned from A C. which stands for any *cardinal point* of the *compass*. The space between every one of these lines should be divided again upon the arch into 4, for *quarters* of *rhombs*, and very small lines drawn through them, whereof the middle line for *half rhombs* should be pricked for distinction-sake: and though my
method

method requires it not, yet to sute other mens, it were good that the other half of the *quadrate* from B. to D. were divided after the same manner into 8 *rhombs*.

On the backside of the *ruler* may be any usual lines, such as of *numbers*, *sines*, *tangents*, &c. But the most necessary for this use are lines of *equal parts*, especially one good long one of 30 in an inch, with a line of *chords*, and another of *rhombs* and *quarters* exactly fitted to it, which are usual things; so that there needs no extraordinary thing to be upon it but the *quadrate* only. It were good to have it of brass, though one of box with a stud, for the *center* at C. may tolerably suffice.

The use hereof.

1. The *distance* being given, take it off the *diagonal scale*, between the points of your compasses, and setting it from C. in its proper *point* or *quarter* (as suppose to 0. on the third *rhomb*) then from that point, take the nearest extension both to the line A. C. and to the line C. D. which being measured upon the same *diagonal scale*, one of them will be the D. L. and the other the DE. But remember that if your *distance* be above 140, it is good to divide it into two or more parts, and work it at several times; as if this course with its *distance* were given N. N. W. 260, it may be divided into twice 130. And when you have found the D. L. and DE. of one, set it twice down in your



236 A COLLECTION for Improvement

traverse-table, or double the numbers. But if it be an odd number, as 199, you may divide it into 99 and 100, or any way else truly, and work it at twice, as if N. N. W. 199 were given, first take N. N. W. 99, and find D.L. and *Dep.* of that *course*: then do the like by N. N. W. 100. and it shall be the same in effect, as if you could have dealt with it all at once. For this is but to break a longer *course* into two shorter, imagining one to begin where the other ended, and to continue upon the same *rhomb* or *quarter*.

2. When you cast up all the parts of your *traverse* (which a mean *arithmetician* may soon learn to do with his pen, and one that cannot read by counters) and have found the D.L. and DE. of the whole *traverse*, you may find the *course* and the distance easily thus: make a large *rectangle*, and taking the difference of the *latitude* with *compasses* off the *diagonal scale*, or the *long scale* of *equal parts* on the backside of the ruler, set it from the *angular point* upon one of the legs, making a prick upon that leg at the place whither the *compasses* extend.

After the same manner, from the same *scale*, take off your DE. and set it on the other leg, making a prick at the end of its extent, drawing a line between the said pricks: the length of which line (usually called the *subtense* or *hypotenuse*) being taken off with your *compasses*, and applied to the same *scale*, gives the distance: and the *least angle* being measured by a *line of chords*, and applied to a *line of rhombs*, fitted to it, shews the *course* in *rhombs* alone, or *rhombs* and *quarters*; that is, it will shew to a quarter of a *rhomb* (and sometimes less) how far it is distant from a known *cardinal point* or *rhomb*.

Sir,

Sir, I could have done this work in far less compass (though these leaves are not many, considering that so comprehensive a subject is handled three several ways:) but I had rather be smiled at by the judicious for too much plainness, than blamed by the unlearned for unnecessary obscurity. Give me leave also to add, that I had thought to have subjoined hereunto a *specimen* of a *table* of *logarithms*, comprisable in a small *octavo* leaf, that will at first view give the *log.* of any *number*, from 1 to 300, and upwards, and by help of common differences to 3000, and above: that so a young artist that works by *logarithms*, might have been to go through any *traverse* in that method, without any other book or table, save three little ones, that a quarter of a sheet of ordinary paper would well contain. But considering that small *logarithm-books* are so easy to be procured, I forbear to insert it, though I have it ready by me, almost finished. The rest is, that I am,

S I R,

Your's to serve you,

A. M.

Apro-

A proposal to supply the defect of small money, from the great encourager of trade, Mr. Thomas Firmin of London.

WHereas there are great inconveniencies in commerce and traffick, arising from the want of a ready exchange of money, occasioned by the non-coinage of small pieces of silver, and the failure of a sufficient supply of *copper farthings*, to the interruption of trading, hindrance of business, and loss of time in seeking exchange, and frequent trouble and vexation to tradesmen and shopkeepers, when haste and business are pressing and urgent upon them.

It is therefore humbly offered to the consideration of such as have the honour and opportunity of address to the King's most excellent Majesty, whether they might not do a very great piece of service to their country, if they would represent this grievance to his royal wisdom for redress, which would redound to the benefit and advantage of so great number of his subjects.

The coining of *groats, two-pences and single pence* having been, not without cause, disused, because the trouble and charge thereof doth out-balance the advantage; and they are inconvenient and troublesome for the payment of great sums. If there may be found out such a piece as will both serve for the payment of greater sums, and for exchange in lesser, it must needs be very beneficial and advantageous to all.

Now it is humbly offered to consideration, whether the coining of *ten pence in silver*, would not be useful to relieve his Majesty's subjects in
great

of HUSBANDRY and TRADE. 239

great part from the former inconvenience, and serve excellently to both these ends, viz.

For exchange in small sums, and payment in greater.

1. This piece will serve for exchange, and supply the want of *groats* and *two pences*, as appears by what follows.

2 d.		Give one of these pieces for a shilling.
4 d.		Receive a six pence for one piece.
8 d.		Give two of these for a shilling.
14 d.		Two shillings for one of these do it.
16 d.		One of these with a six pence does it.
20 d.	must be paid.	Two pieces pay it.
22 d.		A shilling with one of these does it.
2 s. 2 d.		Two of these and a six pence do it.
2 s. 4 d.		This with a shilling and six pence do it.
3 s. 4 d.		Four of these pieces do it.

It will serve also in the exchange of odd money, not only by the help of *nine pences*, but also when a trader hath but four *farthings* (which often falls out when he hath not eight) this piece may do him a great pleasure for the payment of these odd sums, viz. 11 d. 17 d. 21 d. &c.

Vistu-

240 *A COLLECTION for Improvement*

Victuallers and retailers, from whom a great part of the duty of excise belonging to his Majesty doth arise, will receive much benefit and ease hereby.

2. This piece will also be of good use for the payment of greater sums, which will be sooner told than in *six pences*.

For { 24 of these will make 20 s.
 18 of these will make 15 s.
 12 of these will make 10 s.
 6 of these will make 5 s.
 3 of these will make 2 s. 6 d.

Thus will it serve to the payment of all sums, jointly, or severally, alone, or mixed with others; so that it will run aptly into sums of all denominations, while 24 make a pound, 16 a mark, 8 a noble.

What ease and convenience this will afford to his Majesty's trading subjects (which are a multitude) is not hard to be understood.

I am desired by my very good friend, the honourable *Robert Fitzgerald, Esq;* to advertise here what before was done in the *Gazette*, Numb. 1821, as followeth, *viz.*

His Majesty having been humbly given to understand by the honourable Robert Fitzgerald, Esq; and some other Gentlemen, that they had found out the art and mystery of reducing the salt water of the sea into good, perfect, and wholesome fresh water, in quantities sufficient to serve all the uses of any ship at sea; and that this secret was to be performed without mixing any unwholesome ingredient

gradient at all, whereby to endanger the lives or healths of any person that should make use of it; which proposal his Majesty received with a great grace and favour, and was pleased to command the honourable Robert Boyle, Esq; to attend him within some few days after, who upon due consideration fully satisfied his Majesty of the wholesomeness and usefulness of the said water; that his Majesty having received full satisfaction therein, hath been graciously pleased for the publick good (and to encourage so useful an undertaking) to give the said Mr. Fitzgerald and his partners a grant of the same; who do intend from time to time by themselves, or persons to be appointed by them, to meet at times and places hereafter by them to be named, to receive such proposals as may be reasonable from any persons, who intend to have the benefit and use of their said invention.

I presume (beside letting the world know of it) the name of that great, good man, the honourable Robert Boyle. Esq; will be enough to give it encouragement.



 N U M B. II.

The CONTENTS.

An account from the reverend R. G. of Barling near Walfleet in Essex, of a new manner of plowing, whereby he hath done as much in three days with two small bullocks, and one man, as his neighbours could do with four stout horses and two men in eight days. A second experiment from the ingenious Mr. John Worlidge of Peterfield, author of Systema Agriculturæ, about fining and preserving of cyder. Some experiments of Port-sea salt, from Mr. Cragg, sometime husband to the royal-fishery.

An account from the reverend R. G. of Barling near Walfleet in Essex, of a new manner of plowing, &c.

Honoured Sir,

I Cannot but return you thanks for your collection of letters of *H.* and *T.* which you was pleased to send me by the reverend Mr. Fuller.

As these collections cannot but be of great advantage to the nation, none that is a well-wisher to it will refuse to help you, as far as he can, in so good and needful a project. And as I am one of those, I shall answer you to that part
of

of your third enquiry, by which you desire to know what manner of *ploughs* are used in our country, by giving you only an account of those that I in particular make use of, and for which I am beholding to those poor *French Protestants* that fly over unto us for shelter; which I hope shall be one of the least benefits this nation shall receive by their flocking over to us, and our welcoming them with so much charity as we have done.

Though I have but a little parcel of ground, which I hold of the church with thankfulness, I make use, for the managing of it, of three sorts of ploughs, that go upon wheels.

The first, is much after the fashion of most of our *English ploughs*, and particularly like those that are used about *Huntingdon, Lincoln* and *Northamptonshires*; and it serveth me to give the first *tilt* or *turn* to my ground.

The second, which is for the second or third *tilt*, hath two side-boards, with which it throweth the earth both ways, and so breaks it much better than our ordinary *ploughs*, since that by these means the ground is twice stirred, whereas an ordinary plough stirreth it but once.

The third is like the second, except that the side-boards of this are a matter of four foot long, whereas those of the other are but of two.

By the benefit of this last sort of *ploughs*, one may plough in one day, with four bullocks (as I am informed they do in *Poitou* in *France*) ten or twelve acres of ground with ease.

If four horses (which I do not believe) can do as much work again as four bullocks, pray reckon what dispatch they will make in a field in one day. This (tho' not comparable to that) I did towards the latter end of *October* last past, when

the days began to be pretty short. I caused twelve acres to be plowed in three days, with only one pair of small bullocks, and only one man, both to drive and to hold the plough.

Had I hired my plowing (as I did use to do before I had this way of plowing) it had cost me forty eight shillings, which is after the rate of four shillings an acre; and I reckon that it did not stand me in above five or six shillings.

But will the *crop* be worth any thing? This I have been often asked: God knoweth, I say: this I know, that as yet it proves full as well, if not better than that of my neighbours, though they were at a far greater charge; since that they could not do in less than eight days, though they had four stout horses, and two men to their plough, that which I did easily in three, with a couple of creatures that go but little faster than snails.

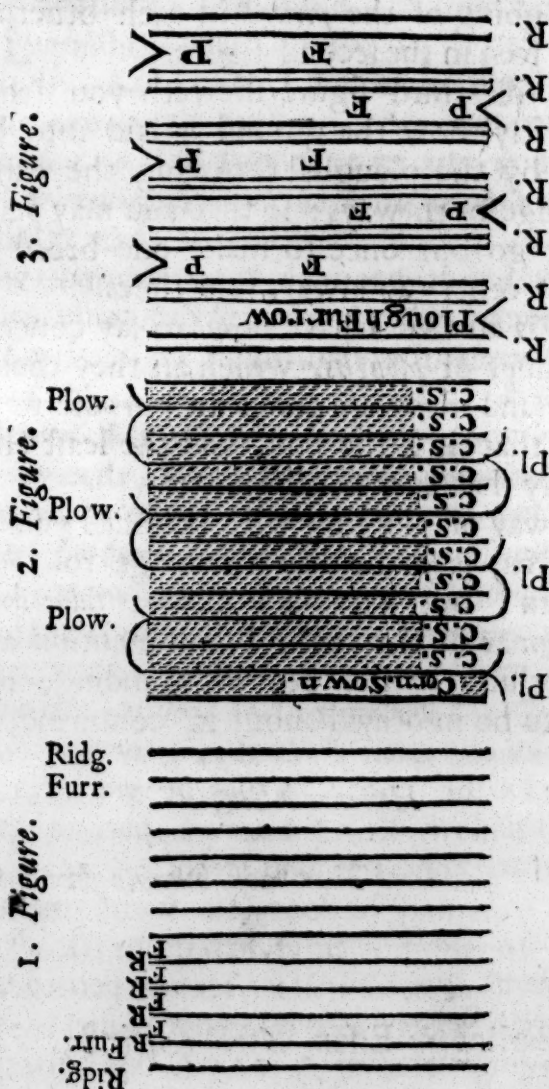
These any one will find *feasible*, when they shall come to understand; first, that we went two journies a day, and for the space of five or six hours every journey: and these bullocks are better able to perform than horses, because these can take a good bait in far less time than the other.

Secondly, That instead of going four times to make a ridge, as in *Essex* they generally do, my man went but once; so that he went no more times about to plow six acres, than others did to plow but one acre and a half.

How this may be done, no doubt you will be glad to know; but how herein to satisfy your curiosity, is a hard matter for my pen to undertake. Nevertheless, I will endeavour to do my best, hoping, that if you can but understand me, you will be pleased your self so to express my meaning,

meaning, that it may be understood by others.

After a good *summer-fallow*, before we sow our ground, we *barrow* it; when it is well *barrowed*, we plow it with our second sort of *ploughs*, spoken of before, all in small ridges, equally distant one from another: so that the ground lieth much after the same manner, as when you have given your field half a *tilt* or a *strike*, as we call it here, or much after the manner of this first figure.



The ground being thus made ready, we sow it with a *broad cast*, or *sprang* it, as others do term it: most of the *corn* thus sown falleth into the *furrows*, as the second figure doth shew.

The ground thus sown, cometh the third sort of ploughs, with which we part each other *ridge* into two, and so cover at one time two *furrows*.

The going of the *plough* in each other *ridge*, is to be seen in the second figure.

And the third figure sheweth you (though imperfectly) how the ground is laid into broad *ridges*, by the ploughs throwing the earth of each ridge both ways: so that you may perceive that we go but once to make one broad *ridge*, and here others go always four times.

This is all that I have now to say concerning my manner of *ploughs*, which all they that have seen it (and many are come on purpose to see it) confess that it is the best, and the least chargeable way that ever was heard of.

My way of plowing with bullocks yoked by the horns, is of no less advantage to the husbandman; but because I cannot describe you the manner of the yoke, I shall mention at present nothing of it. Notwithstanding, if you desire to be informed about it, command,

Honoured Sir,

Your most humble servant,

R. G.

From Barling in Essex, April 30, 1683.

A second

A second experiment from the ingenious Mr. John Worlidge of Petersfield, author of Systema Agriculturæ, about fining and preserving of cyder.

S I R,

MY last to you about the *fining* of *cyder* published in *Numb. 14. p. 182.* being short, by reason that I had not fully perfected some experiments that I was then in hand withal: I am now willing farther to gratify you (if you please so to esteem it) with what I have since observed.

I remember that I then acquainted you, that I did improve or edulcorate the liquor of the seeming hungry *redstreak*, with an addition of that of *sweet-apples*, which then did appear to have enriched it; but making *cyder* of other fruit equally, or rather more jejune than the *redstreak*, without such addition of *sweet-apples*, and at the same season, and *fining* it only by *precipitation* of the *fæces*, it proved to be so pleasant, that it needed not any composition or mixture of a sweeter juice; and the only fault that *cyder* (which was so improved by the *sweet-apple*) had, was its being a little too luscious (by many, not esteemed a fault.) However, it is easily prevented; and in all probability, time may so qualify it, that it may yet prove an advantage.

The same *autumn* I made *cyder* of *deux-ans*, or *John-apples* only, a fruit much more rough and acid than the *redstreak*, yet by a nimble precipitation of its *fæces* or *lee*, without any addi-

tion whatsoever, and drawing it off, it retained its natural sweetness; and although at first it seemed to be a pale and thin liquor, by time it improved it self to be, not only of a bright *Canary* colour, but of a more rich and delicate gust than any other *cyder*, I have yet tasted.

I also then made *cyder* of other sorts of *apples* singly, for experiment sake, which after the vulgar method of making and fining it, usually yielded a mean *cyder*; but by a little timely precipitation of its *fæces* or *lee*, and ordering of it, it proved to be in every respect very near in value to the best.

From which experiments I have observed, that the *fermentation* of *cyder*, as to its raising a froth or scum, is not of that necessity, as is the precipitation of its *fæces* or *lee*, although a *fermentation* in a few days after its making may be advantageous, and doth much accelerate the designed precipitation; for after I had made a vessel of *cyder* of mellow fruit, which did not ferment, but remained thick for five or six weeks: I added some bruised apples to it to beget a *fermentation*, which succeeding not to that degree I expected, I drew it out into bottles, where the *fæces* did in a little time subside; and the *fine* being drawn off, proved as I desired.

Therefore the only way I have yet discovered to make *cyder* to retain its first and purest taste, and obtain the true and proper colour and beauty, that must render it acceptable to the eye, is a timely precipitation and abstraction of its *fæces*, which remaining long in it, putrifies, heats, and thereby begets frequent fermentations, which not only impoverish it, but give it an ill flavour.

To discover the manner how to effect this precipitation, hath set many heads and hands at work; and several ways have been found, which are needless here to repeat. But all mixtures, of what nature or kind soever, other than what proceeds from the apple, are to be avoided; seeing that the same end may be attained much more to the advantage of your *cyder*, without any foreign additions, as in my last I hinted to you. Now after a full experience of the truth of it, I may confidently aver, that bottling of *cyder*, after it hath stood three or four weeks on the *lee*, whether it be thorough fine, or not, will cause a precipitation of the *feces*, and render it very pure: so that it is but having a stock of glass bottles, the larger the better, according to the quantity of your *cyder* you intend to fine; and you may (in two months time after the grinding your apples) have them filled with the finest *cyder* for taste and colour, and fit to preserve for your use.

But if your stock of *cyder* be too great for your bottles, then will it be necessary to rack it from its *lee* into other vessels; and in case it doth not *fine* in *wooden vessels* so well as you desire, for want of that coldness that glass bottles have; then you may take *pebble-stones* or *flints* (washed clean, and dried) and put a convenient quantity of them into your *cyder*, in at the bung, which is said (and with great probability also) to have much accelerated the *precipitation* of the *feces*; and the applying of a bag of *salt* on the outside, under the vessel, hath been affirmed (by its extraordinary coldness) to beget the like effect. But these (having my self not had the experience of them) I only commend to the curious, as probable

probable ways to save great quantities of *cyder* from being impaired ; for it doth appear, that cold doth make liquor more thin, and more easy to let the grosser parts fall ; and that warmth doth (as in many *philosophical operations*) cause it to retain that which is mix'd with, or dissolved in it.

Therefore the diligent artist in these operations will find, that the colder his vessels are in which he disposeth his *cyder*, and his *cellars* or *repositories*, wherein he placeth his vessels, and the sooner he divideth the pure from the impure, the better will his liquor be : and a vessel of such (mechanically improved) *cyder*, will very much exceed either that which rests long on its *fæces*, or that is refined by foreign additions.

But that you may not be to seek in the method of drawing off *cyder* from one bottle into another, without raising the settling in the bottom, which usually happens in *decantation*, I will give you a *draught* of the way I so often mentioned.

First,



First, Place the *bottle* out of which you extract the refined *cyder* on a *table* or *shelf*, as at *b*.

Then take the *syphon* and put it into the *bottle*, as at *a*.

About that leg of the *syphon* that is to go into the *bottle*, whip a ring of *blue*, *red*, or the like, *yarn* or *worsted*, which will slide up and down as you please, as at *d*.

Then hold your *receiving-bottle c*, with a *funnel e*, under the outward leg of the *syphon*: and first, whilst one holds the *syphon* with his fingers at *d*, let another suck at the lower

end of the outward leg of the *syphon*, till he perceives the liquor approach; then let him take away his mouth, and apply the *bottle* and *funnel*.

Or he may have a small *glass pipe* turned as at *f*, which may be applied to the end of the *syphon*, wrap'd about with a little *worsted* or *yarn*; and so he that holds the *receiver*, may draw the *cyder* into the *syphon* without touching it with his mouth.

But before you draw, let the strait leg of the *syphon* sink into the *bottle* till it touch the bottom,

bottom, and place the ring of *worsted* or *yarn* even with the mouth of the *bottle*: then lift it up gently about an inch, or till you think it be somewhat above the *feces* or *settling*, and there hold it between your thumb and two of your fingers at the mouth of the *bottle*, then draw, &c. and as the *cyder* runs into the *receiver*, thro' your transparent *syphon* (when you think it is near the bottom) let the *syphon* sink between your thumb and finger by little and little, so may you easily perceive the least cloud arise; then let it sink no more, but run as it will, till all that is *fine* be out.

At any time when your *receiver* is full, stop the lower end of the *syphon* with your finger, whilst he that holds the *receiver* changeth it for another.

Thus may be drawn off many bottles in an hour, and with great expedition, when once you have settled your self to it.

To make one of these *syphons*, take a pipe made of *chrystal* or *flint-glass*, such as is usually made and sold at the *glass-shops* for a *barometer* or *weather-glass* for *quick-silver*; for those are the thickest, strongest, most transparent, and most easy to turn in the fire; then make a charcoal fire on some plain hearth, and put that end of the pipe that is usually hermetically sealed or closed up, into the fire; and when it is hot, put it about an inch into cold water, and it will soon break off, then is your pipe open throughout.

Then lay the *pipe* across the fire (by a gradual access, lest sudden heat crack it) that about five or six inches near the middle may be *red hot*, yet so that one end may be two or three inches longer than

of HUSBANDRY and TRADE. 253

than the other; when it is thus hot, holding your *pipe* at each end with each hand, you may bend it to the form described at *g*, then cool it (by a gradual taking it from the fire, lest the sudden cold air break it) and when it is cold enough to handle, put the longest leg into the *fire*, and when it is hot, turn it into the form as at *b*; but because the end will be too hot to touch with your hand, you may manage that end with a pair of *tongs*.

As to the wideness of the inside of the *pipe*, you may have them of what size you think good, and for the length, according as the depth of your deepest bottles require.

As to the choice of fruit, and manner of grinding and pressing it, which much conduceth to the making this curious drink, I would have given you some observations about it at this time, but shall refer it to another opportunity, fearing I have been already too *prolix* herein. Thus only from,

Yours to command,

June 25, 1683.

J. W.

Some

Some experiments of Port-sea salt from Mr. Cragg, sometime husband to the royal fishery.

S I R,

I Cannot but commend your good design in publishing your *Collections for Improvement of Husbandry and Trade*; may the success be as great as you desire it; and to help on, I have sent you some of my *notes and observations* about *salt*, which I had occasion to remark, as being several years in the service of the *royal fishery*.

To define what *salt* is, or give an account of all the native and factitious *salts*, is not my purpose; but the *salt* I shall speak of is such, as is commonly used for *curing* or *saving* *flesh, fish, butter, cheese, &c.* and of this there are diverse sorts, as *Spanish* and *Portugal*, which are not much different; *French, English, and Scotch*, with some others, not to my purpose; and also *salt upon salt*.

Spanish and *Portugal salt* are made by the heat of the *sun*, and appears in ragged forms from small pieces to those as big as one's hand; and in its kerning, much filth of the sea and sand is embodied with it: of this *salt* thus only made, the *English* and *Dutch* use but little, and then it is mix'd with smaller *salt*. I suppose that the *small* may save the provision for present, and the *larger* dissolve by degrees for a longer preservation; but their chief use is to make *salt upon salt*; of which anon.

French salt is made like the other, but of far lesser kern, and much worse, as appears by its
foul

of HUSBANDRY and TRADE. 255

foul colour, and fulness of filth and sand; by which, upon refining a quarter part is lost, as I know by my own experiment; and it is a great argument that the *Spanish* and *Portugal* is better, or else the *Dutch* would not go so far for it, when they can have the *French* much nearer and cheaper.

French salt, usually in three or four months makes *fish* or *flesh* eat hard, and look of an ill muddy colour, and in less than a year's time it begins to corrupt, and shortly after rots; it is very rare that it fares better: and although some may say otherwise, I question not but it will be found that some white *salt* was mixed with it; and this I have often tried.

Scotch salt, and that of *Newcastle*, are made by boiling sea water without any previous preparation: but the first, *viz. Scotch*, is reckoned the better, I suppose, by reason of some better care or art of preparing it is of a larger kern, and will go farther: but if *Newcastle* would enlarge their kern, and clear it from its *bittern*, then this *salt* would be of excellent use.

There are also in *England* several inland *salt-works*, proceeding from *brine-springs*, with which a little care and study might be made of great use, and in very great quantities.

Salt upon salt is made of foreign *salts*, brought hither, or carried to *Holland*, and dissolved in sea liquor, by settling and clarifying, and boiling of which they purify it in a great measure from its dirt and sand; and this *salt* the *Dutch* highly esteem, for saving of their *summer herrings*, and all other fish they are curious in.

A *salt* much like this, made at once from *sea-liquor*, well settled and refined, is the *salt* I chiefly design to speak on, *viz.* That which is

made at *Port-sea island*, and places adjacent in *Hampshire*; an account whereof you may see at large in Mr. *Collins's* ingenious treatise of *Salt and Fishery*, printed in 1681, which may be afforded very cheap; and by reason of its convenient situation for *Flanders*, and all that is *East* of it, and its capacity of affording very great quantities, gives hopes of *England's* supplying it self, and them with *salt*.

Of this *Port-sea salt* I will tell you some of my own *observations*.

Upwards of three years ago, the *royal fishery company* used altogether this *salt* to cure their *island cod* with, which made it look so white, dry and firm, that Mr. *Paxton* and his partners (*fishmongers* in *New-Fishstreet*) declared, that they hardly ever before that time saw any of that sort of *cod* look so well, and prove so good, and also preferred it before any of that sort of that year, by forty shillings the thousand.

Herrings were saved also with the same *salt*, and proved as well as any *Dutch* that ever were seen. I my self had a small cask of them; some of which I kept two years in the *pickle* they were first salted in, and they were then exceeding good, and the *pickle* as good, which I consumed as *sauce* for *mutton*, not inferior to an *anchovy*.

This *salt* at *Port-sea* is afforded at ten pence the *buschel*, I suppose, cheaper than can be had any where else of the same goodness; and I question not, but if a good stock were raised, means enough might be found to afford it for half the money.

I my self in *Feb. 79.* made a strong *brine* with this *salt* so strong, that no more *salt* would dissolve, and in it put two *porkers*, some of which
I kept

I kept till *July* following, and boiled with *beans*, which proved full of *gravy*, very *red*, not over *salt*, and in my mind exceeded any *English bacon* that ever I tasted.

In the same *brine*, which I kept without boiling for two years, I sunk a *brisket* of *beef* eight days, about *February*; then took it out, and hung it in a string by the wall, in a temperate open place for six weeks, and then dress'd it with a boiled *sallad*, which had as many good qualities as the abovesaid pork.

About the same time I sunk another piece of *beef* for twenty days, and afterward hung it up in an open place for the whole *summer*, and at *Michaelmas* it was very good.

My speaking of these things to some of my acquaintance they laugh'd at me; but Mr. *Biddle*, *fisbmonger* at the *King's-head* in *New-Fishstreet*, would try an experiment, and in the beginning of the *dog-days* bought a *leg* of *mutton*, and sunk it in *brine*, prepared as afore, all night, then hung it in a string, in defiance of the season and flies for ten days, and after dress'd it, inviting his other companions to help eat it, and it was excellent good, and so fresh, that they eat *salt* with it.

Here is enough said to help those that live far from market, or kill their own *beef*; and I question not, but if any body would send me some *venison* so ordered from any part of the kingdom, it will come good to my hand.

Sir, It is probable, if this pleases the world, I may furnish you with more examples: *interim*, I subscribe your loving friend,

Rob. Cragg.

TUESDAY, Nov. 6. 1683. NUM. III.

The CONTENTS.

An essay to prove, that if no wood for fuel or timber grew within twelve miles of a navigable river within this kingdom, it would be its great advantage. A relation of the culture, or planting and ordering of saffron : by the honourable Charles Howard, Esq; extracted from the Philosophical Transactions, Numb. 138.

An essay to prove, that if no wood for fuel or timber grew within twelve miles of a navigable river within this kingdom, it would be its great advantage.

S I R,

MY last being an account of an extraordinary profitable plough, learnt from the French Protestants : of fining cyder, without addition; from Mr. Worlidge, the author of *Systema Agriculturæ*, and several great experiments of the use of English salt, from Mr. Cragg, being in July last.

I should before now have given you this, but my other private affairs hindering, I hope you will excuse it; I presuming you look on this to be

be done as my recreation, not my business: but to make you part of amends, here are four sheets instead of two; and if you have four and twenty within the year, it will be as good as two each month.

Sir, I am not unsensible of the great fondness the generality of *Englishmen* have for wood; wherefore, if I meet with censures for this my bold attempt, it will be no more than what is expected; but if they will be pleased to have so much patience as to read and consider what follows, and then give some reasonable answers, they will be very obliging, and I shall be as willing to acknowledge my mistake, and for the future, strive to promote the contrary.

The method I intend to pursue in making good my proposition shall be to shew you, that the contrary thereto, *viz. Encouraging the growth of wood within the twelve miles aforesaid, will greatly prejudice the private and publick wealth; and as the consequence, the navigation, popularity, and strength of this kingdom;* then I shall strive to answer what objections shall occur, that I think material, and conclude with a submission to better judgments.

First, I will consider the prejudice done to private *wealth*; and in order thereto, tell you a story, but a true one.

There lately was a person of great honour of this realm, who among his other *demesnes* had a wood, containing about thirty acres of land, which his honour designed to have had grub'd up, thinking it, so, most for his advantage. About this affair he consulted with his steward, as one of the fittest to advise him (he being such an one as I take to be very honest, a good servant, and as wise in *country affairs* as most of

his neighbours.) This steward advised his Lord to the contrary, as a thing would be much to his damage. He being one time particularly in my company, and discoursing about country affairs, he told me this. I told him I thought he had damaged his Lord, and I could prove it; in order to which, I ask'd him the value of the whole, when newly cleared of the *underwood*: and he told me, for the *stems* or *standels* that were left, he might have had the ground cleared and plowed, and two hundred pounds in money, and the land being inclosed, would annually let for five shillings the acre; but if it were permitted to stand, the *stems* or *standels* would be improved in thirteen years (the time for the next fall of the *underwood*) a hundred pounds more, *viz.* three hundred pounds: the *underwood* would also sell for six pounds the *acre*, which, for the thirty acres, is one hundred and eighty pounds more; in all, four hundred and eighty pounds: all the profits could be made in this thirteen year, except to put in a few calves, or the advantage of a few acrons, which he valued at little. When I had this account we parted, and at my leisure I calculated the interest of the two hundred pounds he might have had for the *standels*, if grub'd up, and the *interest* of the *interest*, then the five shillings an acre, *viz.* seven pounds ten shillings a year rent, and its interest; and by this means I found, that in the thirteen years time he prejudiced his Lord about seventy pounds: had this been received by half years, or quarters, it would have been more; and the advantage of often fingering money, brings sometimes more profit than common interest.

I also

I also considered, that had this wood been gone, the other that his *Lord* had thereabout would have sold for more, and so much more it would have added to the loss. The wood made little or no employment till the thirteen years were out, and then not much; but otherwise, whether *pasture*, *arable* or *garden*, it annually, if not daily, found employment for many, by means of *wool* or *hides*, *hair*, *tallow*, *flesh*, *corn*, *hay*, *garden-stuff*, or such like; and it was likely that this land, with the labour of those that must be otherwise idle, or not fully employed (because no other work would cease, but might be more advantaged) might yield two, three, four, or more pounds a year, according as it was husbanded. This must needs have increas'd or improved his tenants, but might have undone the poor, by making of them richer, and by means of their employment, enabled them to have procured wood or coals farther off, and have left them money in their pockets to boot.

This is the case which I sent to my friend the steward, who, when I met him, and at several times since, hath granted what I said to be true; but what will be done at the end of the next thirteen years I know not.

If the former account be any ways grateful, then I pray you to accept another of my considerations.

If no wood for fuel or timber grew within twelve miles of a navigable river, then I humbly conceive, that the necessary consequence thereof would be a great want both of fuel and timber: and also, if men love their interest (which seldom lies) an increase of *corn*, *cattle*, or something else as advantageous. Now if the clear profit of this *corn*, *cattle*, or something

else, shall be able to purchase as much fuel and timber as was wont to grow upon this ground, then it will plainly appear that the destruction thereof will be no prejudice.

That this may so appear, I will suppose that two gentlemen should purchase for each of them an estate of three thousand acres of land, which should join together, and be either of them distant twelve miles from a town upon a navigable river, which should be the market for their corn. I will also suppose each of these estates to have an hundred families on it, with employment enough for them; and also one thousand acres of wood, and so much alike, that it should not be worth five pounds for the advantage of choosing first.

One of the purchasers I will call *A.* the other *B.* and the *market town* on the river, *C.*

As soon as these gentlemen were settled, I will presume *A.* immediately cuts down all his wood, which as the consequence thereof, presently puts money in his pocket, as a tool to work with more than *B.* hath, who is resolved to take care of his *wood*, according to the custom of his fore-fathers. By this means it certainly follows, that there will be an Employment on *A.*'s estate, for people and teams to fetch fuel and timber farther off. If they burn *wood* still, it is likely they must buy it from *B.* as the nearest neighbour, which may increase *A.*'s people according to its proportion, and in the mean while *B.* sells his *wood* a little dearer, which amounts but to a small matter.

But it is likely *A.* troubles *B.* for very little of his *wood*, especially for *fuel*, *fir-timber*, or *wainscot*, because he finds out a better way to supply his occasions, *viz.* He carries a load of

CORN

corn to *C.* the market town on the river, the carriage whereof he values at eight shillings; so likewise doth his neighbour *B.* and I will suppose that under it cannot be afforded. *B.* by reason of his great plenty of wood at home carries nothing back: but *A.* to supply what he much wants, carries a load of coals or timber, which load carrying is valued at six shillings; so that *A.* makes fourteen shillings of his journey to the market, and *B.* but eight shillings. The sight of this profit presently gives encouragement to some tenant of *A.*'s to get him another team; and that he may have employment, he offers to carry the corn for his landlord or neighbour at seven shillings, which if he doth, the rest of his fellow-tenants must do the like, or otherwise must be employed only with his refusals, which rather than they will do, they will offer to carry it for seven, or six, or five shillings; and by this means *A.* sells his corn cheaper and quicker than *B.* and gets home sooner, to do some other business.

B. seeing all this, bethinks himself why should he give eight shillings for carrying a load, when his neighbours will carry it for him cheaper, he will not give it, but hires his neighbour's teams, which necessitates his own tenants decay; and by consequence, on his land he will have less manure, less corn, and less people; while on the other side, by an increase of teams, and people to manage them, they every day augment their plenty.

Besides this, another advantage belongs to *A.* his tenants seldom are caught stealing of wood, because there is none; and they must also get some money beforehand to buy fuel, or else a

cold winter undoes them, and they must pinch severely: but with *B.* it is quite contrary, if there be a *hatchet* to be gotten, firing will be had.

But a greater advantage than this hath *A.* for instead of his *wood*, he hath added a thousand more acres of pasture and tillage to what he had; and thereby, according to the first proportion of a hundred families to the two thousand *acres*, he must needs add fifty more families to them. This new increase makes a greater consumption of what the *artist* makes, or the *shopkeeper* sells; wherefore some will adventure from other towns to live here, till they have made this place like a famous city, which increases *rent*, *manure* and *improvements*; and the only abatement that I see to this, is the decay of a few *woodmen*.

Neither is *A.* profitable only to himself, but also a considerable gain to the kingdom, for his *market* is increas'd by the product of his thousand acres, and ships will be employed to fetch him coals and timber. But how many ships, if all within the twelve miles should do as *A.* I won't determine; yet reasonably suppose, as many as are employed for the supply of *coals* and *timber* to *London*; and I am credibly informed, that of *coals* are *annually* brought three hundred thousand *chaldron*. This might frighten our neighbours from making war with us, and with that, bring a farther advantage of an honourable lasting peace.

I have not willingly, in this my supposition, strained any thing beyond its proper strength, but have fairly endeavoured to shew the damage may be done in some places to private persons, by encouraging the growth of *wood*. I will

now

now go to my second head, and consider the prejudice it may do to the publick.

In order to which, I desire it may be granted, that if a man can have fuel and timber as convenient and cheap from other places as from his own land, then whatsoever he destroys from his own land will be no prejudice; but whatever profit he can make of his land, more than he made of it when it was full of *wood*, by so much he is a *gainer*.

If this shall be granted, as I persuade my self it may, then I affirm, that all the ground within the twelve miles of a navigable river, that fuel grows on, and will bear other matters, by exportation of which, profit may be brought into the nation; or by using which matters at home, other matters may be produced, which will bring in profit: I say, that such ground is in effect lost, because it hinders the burning of *coal*, of which we have enough for every body, and it costs the nation nothing; which may easily be understood, by considering the nation as one man, in one joint-stock; and so, I presume, the *parliament* always consider it. By thus doing it will appear, that what one pays to another in *England*, amounts to the publick, no more than the putting a crown out of my *right pocket* into my *left* doth to enrich me. So *coals*, being they belong to *England* already, will cost *England* nothing but labour; and that is worth nothing, because it only employs such as would otherwise be idle, or such as would be employed only in consequence of this employment; and I challenge any body to tell me how employments for others cease, for want of the people herein busied, seeing we have abundance of people still that want employment; and it is a plain case, that this
finds

finds work for a great many people, particularly, as I hinted before, if the *port of London* spends three hundred thousand *chaldron* of *coals* a year, it doth employ to fetch them, as I am certainly told, fifteen thousand men, if they went but one voyage in a year; for the rule is, one man to twenty *chaldron*. But I will suppose they go six times a year, some few eight times: nay, I will grant all eight times, then the number will be but eighteen hundred seventy five, besides all that are employed in digging these *coals*, bringing them to the *water*, carrying them in *keels* in *shipping*; all the *crimps*, *meeters*, *lightermen*, *carmen* and others, that are employed to carry them from the *ships* to the place of *consumption*; as also, what are concerned about building and storing *ships*, and supplying provisions for this great number of seamen, and others: had we the number of all these people it would be very great.

Now, if the *port of London* consumes so many *coals*, I cannot but think, that all the people within the aforefaid twelve *miles* would consume as much, if not many more; but for fear I should think too many, I will abate as much as can reasonably be judged, but do believe, that some will be granted, and so many as will add (suppose no profit to the whole, because serving our selves) yet at least a great *navigation*, and bring a great strength to our country; and if it will not be readily granted me that such an increase of *shipping* and *employment* for people may enrich us, I won't now dispute for it.

But if our having so many *seamen* extraordinary, and so many *landmen* extraordinarily employed, by reason of such a new *coal* trade, shall

shall be the means of our *exporting* any *coals*, or our getting any thing by any other *foreign trade*; then so much as we do get, so much will *England* be advantaged; and if by our being stronger in *men* and *ships*, our neighbours shall have the less mind to quarrel with us, or the more desire our *alliance*, by so much we may be the happier at least, though no riches should succeed.

The number of ships that must now be employed to fetch three hundred thousand *chaldron* of *coals*, supposing them, one with another, to be of two hundred tun burthen, or to carry ten score *chaldron*, and to go eight times a year, would amount to the number of one hundred eighty seven ships and a half: but if this should be doubled, *viz.* three hundred seventy five, what a brave fleet of good ships would it be? especially, if it was joined to the ships that are now employed in serving other ports in *England*, *Scotland* and *Ireland*, with the others, in which we carry *coals* to our neighbours.

Thus much for *fuel*, which costs the nation nothing: but timber comes under another consideration, for if all within twelve miles of a *navigable river* were destroyed, we must have it farther off, from *home*, or from *abroad*; if from *home*, it will cost us no more than what the growth of it will hinder other productions, and that, I suppose, will be but small, because the places within the twelve *miles* where it doth grow, will produce as much of any other useful thing, as the places farther off, where it may grow; and if it must grow somewhere in *England*, the learned *John Evelyn*, Esq; in his excellent book called *Sylva*, will shew how men
may

may husband so their *woods*, as to have much more on an *acre* than usually they have.

But if it shall be more a private *interest* to fetch timber from abroad, than from the inland country, I believe it will be done, but then it will employ another sort of *shipping*, and increase us in some measure like the *coal trade*. But thus it will cost some money; it is likely it will; but what then? It will also get some trade for *tobacco*, *stockings*, *wastcoats*, *coarse cloths*, and several other things in those parts. And in the second number of the first *Vol.* of these *Collecti- ons*, treating of the matter and use of *money*, I have shewn, that if we do not export our *money*, it will do us no good. And I pray, how do we get our *money*? Why truly we carry our *product* or *manufacture* to *Spain*, and there for it get *money*, and this *money* we carry to *Norway*, and swap for *wood*; and what the difference is, (except a little more employment for ships and seamen, which we reckon happiness) between this, or carrying our *manufacture* or *product* directly to *Norway*, I profess my *understanding* won't direct me to.

I think here is enough said to shew that this destruction of *wood* within twelve miles of a *navigable river* will be no loss to the *publick*: now it will be necessary to shew that a gain will follow.

I reasonably believe, that in the place where *wood* now grows, if it were grub'd up; *corn*, *cattle*, or somewhat else as profitable to the *private man*, would quickly be: if *corn*, then it will follow, that if we have enough already, we may export some; and whatsoever we bring in for that will be clear profit. But if by reason of the plenty of *corn* abroad, it shall hardly be

of HUSBANDRY and TRADE. 269

be worth the *private man's* while to export; yet if we brew more strong *beer*, *ale* or *mum*, breed more *horses*, fatten more *swine*, or do any thing of the like nature, and export them, it will turn to a *publick profit* as well, perhaps better, than if we had exported our *corn*. But if this increase of *corn* should still cheapen it, and by that means give a discouragement from sowing it within these twelve *miles*, or some other places, I cannot yet believe that this will cause the *land* to be given away, or to lie quite waste, but rather it will put men upon considering how to improve it to better purposes, and that in likelihood will still find employment for more people, and turn to some publick advantage; for it will supply us with something we quite want, or increase us something we have not enough of, or enable us to supply our neighbours with something that we have too much on.

If we increase in *cattle*, it will do the like as in *corn*; particularly we shall, if they be cheaper, so much more hinder the *importation* of them from abroad, if any comes, and have the more *wool*, *hair*, *horns* and *hides* for a farther *manufacture*; and whatsoever we fetch in for these, or such like *products* or *manufactures*, will be so much more gain, than would be by the standing of *wood*; though I must also confess, that if by an *excise*, allowance for *exportation*, a higher manner of living, making of *stronger drink*, or any other contrivance, we could make our *plenty* dear, it would be a great advantage, for then our *poor* will stoutly work, but otherwise it never agrees with them.

Now I have said thus much for the destruction of *fuel* and *timber* in all parts of *England* that are within twelve *miles* of a *navigable river*,

ver, I will, to make this matter more plain, endeavour to answer such *objections* as I find to seem against it.

And first I will consider what is said by my very good friend the ingenious Mr. *John Worlidge* of *Petersfield* in *Hampshire*, one, who for his great pains and industry in promoting the *English husbandry*, deserves a name as lasting as *Virgil*, or *Columella*. This good man, in the 72^d page of his second edition of *Systema Agriculturae*, being the sixth chapter, and treating of woods, saith thus; ‘What can be more profitable than woods or trees? Which will thrive and increase on the most barren and unfruitful land, be it either wet or dry, cold, mountainous, uneven, remote, or never so unapt for any other manner of culture, where neither corn, grass, or any other necessary or useful vegetable will hardly grow, yet may we there perceive the lofty woods flourish, far exceeding in value the purchase of the land without them; and instead of injuring the land whereon they stand, it is much bettered and capacitated to bear tillage at the removal of the trees; also the other bordering grounds yield a greater increase of corn or grass, by their defence from the extremity of the cold, and bitter blasts in the winter, and the scorching drought in the summer.

That which I will say to this, is, I have shewn already in the foregoing history of an honourable person and his steward; that corn ordinarily is much more profitable, both to private and publick wealth, than ordinarily wood is (extraordinaries I will consider anon) and I have lately met another story from the mouth of a worthy gentleman, a very good friend of mine, within 7 miles of *Bedford*, who possesseth as fine a wood as any of his

his neighbours, but the *underwood* yields him but six pounds once in thirteen years; by persuasions of a *tenant* of his he grub'd up forty acres of this *wood*, for which, *viz. timber* and *underwood*, he put a good sum in his *pocket*, and hath let a *lease* of the *land* for one and twenty years, at fourteen shillings an *acre*, and is told by his *tenant*, that when his *lease* is out, it will be worth a pound an *acre*. And the thirty acres of *wood* I before gave you an account of, is not many *miles* from this place; and I know not why it might not have let for as much as the other, although my friend would not suppose it to let for more than five shillings the *acre*.

I will not deny, but some sort of *trees* may thrive and increase on any manner of land, but that there should be any place where *trees* will flourish, and hardly any other useful *vegetable* grow, I much question; for *potatoes* grow in *Barbadoes* between the *rocks*, where hardly earth appears; *French furzes* on *sand*, that was thought fit for nothing but mischief; *grass* on *sands* in *Norfolk* and *Suffolk*, that were wont to flow forward and backward by the winds, as water doth by *tides*, as I have shewn in the first volume of these *Collections*. Is it not common for high *plants* to grow on old *stone walls*, and tops of *houses*? *Juniper*, *thorns* and *thistles*, almost any where? and it is said of *St. Foyn*, if it be sown on the poorest and barrenest land we have, it will thrive, and raise a very considerable improvement, for on rich lands the weeds destroy it; besides, it meliorateth and fertilizeth the land whereon it hath stood for many years, and not barrenizeth it, as is usual with annual seeds. You may break it up, and sow it with corn till it be out of heart, and then sow it with *St. Foyn* as formerly; it will thrive on dry and barren grounds,

where hardly any thing else will, the roots being great and deep, are not so soon dried by the parching heat of the sun, as of other grasses they are.

I will grant, that trees may better the worst sort of land, and capacitate them to bear tillage at the removal. But would it not also improve that ground, if there were only some rows of trees, and some other more profitable vegetables cultivated between? And might not some pear-trees, or other, that bear fruit, serve as well as those that are only for fuel or timber? Truly, I see no reason to the contrary; and I query, whether upon some sides of these barren hills would not grow vines, and on other sides some other fruit-bearing shrubs: I wish some well-minded gentleman would make the experiment.

Mr. Worlidge gives several instances of great profits made by wood; particularly a bill for corn or grass, not worth five shillings an acre; that in twelve years time the very copious wood hath been sold for twenty pounds an acre; and at the next seven years end, it was likely it would yield the same value. And from Mr. Blyth he quotes a new plantation, that in eleven years time made sixty pounds an acre: and others, of poplar, willow, and fallow, that yield five pounds an acre at seven years growth. These are great advantages; and what Mr. Worlidge affirms of his own knowledge, I believe, and what from others I don't question. But surely they grew in some places where wood was extraordinarily scarce, or they did not think of being supplied with coals, or the wood was fit for pike-staves in time of war, hop-poles, coach-poles, or some other extraordinary occasions, or the land was extraordinarily fit for it. But however it was, if I had such, I believe I should except it from my general rule: yet let the profits be what

what they will, there are examples of profits from very contemptible land, from new *husbandries*, that will vye with them: but for ought I can learn, there are very few places now in *England*, unless by great towns, where the *coppices* will yield by the acre, one year with another, more than ten shillings a year, and a great many places where they won't yield that: and of this, those that have the curiosity to enquire may soon satisfy themselves. *Tanning* I shall consider anon.

In the mean time, I question not, but you eagerly expect to hear what may be said in answer to Mr. *Evelyn's Sylva*. There he seems to be quite of another opinion, and to give many instances of profits from *woods* so great, that few other parts of *husbandry* can equal them.

I must confess Mr. *Evelyn* is a great man, one that I have the honour to be acquainted with, and happy is he that is so: he is a gentleman of great *piety*, *modesty* and *complacency*, and also endowed with such an universality of useful learning, that he may very well be esteemed a *darling of mankind*. But he is particularly well vers'd in the affairs of the *woodman*, and his *Sylva* is so good a book, that I have not heard of any thing written on the *subject* like it. To answer it I will not pretend; to gainsay what he affirms, I can't; for I believe he loves *veracity* more than life. I will only make some *observations*, and if my *sentiments* differ from his, I know he will pardon me, he being well inclin'd to allow freedom of *thought*, and also well vers'd in a motto, NULLIUS IN VERBA.

Now I first observe the reasons why this *Sylva*, or discourse of *Forest-Trees* was delivered to the *Royal-Society*. It was, as I am told, in the

title-page, upon occasion of certain *queries* propounded to that illustrious *assembly*, by the honourable the principal *officers* and *commissioners* of the *navy*. What these *queries* were do not altogether appear; but by the discourse one of them seems to be, *how timber might be propagated in his Majesty's dominions*. An answer to this our ingenious *author* hath bravely given. But my considerations are not, *how, or how not to propagate timber*: but a *query, whether it is best, within certain limits, to propagate it or no*; a thing quite beside his design. Indeed, in his *introduction*, he, like a very good *Englishman*, laments the notorious decay of our *wooden-walls*, which he thought likely to follow, when our then present *navy* should be worn out, or impaired: and I must confess, when he considered the great destruction of our *wood* that had been made (in the foregoing twenty years) by some through *necessity*, and others through ill ends and purposes, together with our not being used to fetch much *timber* from abroad, and a general cry, that none could furnish us with any (for *shipping* especially) so good as our own, with the addition of what amounted to a *complaint*, from the honourable *commissioners* of his Majesty's *navy*: when he considered all this, I say, every good man will rather commend than blame his *zeal*. But now, since that destruction of our *timber* hath forced us to look out for a more convenient supply to *London*, and some other places, and our having greater experiences of *sea-fights* than ever we had before, other things are known: and it is believed, to my certain knowledge, by some of the *commissioners* of the *navy*, and others that have been greatly concerned in building of *ships*, that there is some other *timber* in the world that

will build *ships* as well as ours : for instance, the *French Ruby* that we took from *France*, when he joined with *Denmark* and *Holland* against us, had such good *timber* in it, that as I have been told *England* never had better ; the bullets that entered this *French ship* made only round holes, without *splinters*, the thing our *timber* is valued for ; and it was so hard, that the carpenters with their tools could hardly cut it, it was like a piece of *iron*. I fancy it some of that *oak* Mr. *Evelyn* speaks of in his forecited *Sylva*, Chap. 3. Pag. 25. ‘ There is (saith he) a kind of it so tough, ‘ and extremely compact, that our sharpest tools ‘ will hardly enter it, and scarcely the very *fire* ‘ itself, in which it consumes but slowly, as ‘ seeming to partake of a *ferrugineous* and *metallin* shining nature, proper for sundry robust ‘ uses.

These last thirty ships that were built have a great deal of foreign *timber* in them ; and although there is some decay in them already, yet, I am told, that the fault is not attributed to the foreign *timber*, but rather to the hasty building, the King having not a *stock* beforehand, the *timber* had not time enough for a seasoning.

For these reasons, and what I said before about the increase of *seamen*, persuades me to believe that such means will never lessen our strength ; and, I question not, but that for our *money*, we may be furnished sufficiently from abroad. But more of this hereafter.

In the thirty fourth chapter of the aforesaid *Sylva*, are a great many examples of immense profits from *wood* ; upon consideration of which, I would advise our *wooded men* to make calcula-

tion much after the rate as I have done with the person of honour's *steward*; and if they find that the sowing for *wood* is likely to prove more advantageous than otherwise, let them do it in God's name; but I would advise them to compare extraordinary profits by *wood*, with extraordinary profits by *corn*, or other *husbandries*; and take notice, that if according to captain *Smith's* account (in *page* 248. of *Sylva*) an *acre* of land that hath several rows of *trees*, will yield ninety *busbels* of *corn* in three years, at five shillings the *busbel*, besides *straw* and *chaff*, &c. then the same *acre* of land, if the *trees* be grubbed up, may yield upwards of seven pound ten shillings a year: and if the person of honour's thirty *acres* of *wood land* beforementioned had (if grubbed up) instead of a *crown* been supposed at this rate, what a sum would it have amounted to?

Besides what is already said, I find several other *objections*; and the first is, if all our *wood* within twelve miles of a navigable river should be destroyed, it will make fuel and timber very dear.

To this I answer, that if it doth, and the ground where *wood* useth to grow, will yield a greater profit, it is no matter; but we see the contrary, for where there are abundance that trade in one commodity, and independent one of another, there will be several, whose necessities will oblige them to sell *cheap*. And this we see in *coals*; for notwithstanding the *duty* of three shillings a *chaldron*, they are commonly delivered to our houses in *London*, in *summer* time, for nineteen or twenty shillings the *chaldron*, that is, sixteen or seventeen shillings be-

sides the three shillings. And although I knew *London* some years before this *act* for three shillings was made, I never knew *coals* cheaper: and for *timber*, notwithstanding the great consumption hath been made in building the city of *London*, the town of *Northampton*, our thirty men of *war*, other merchants *ships*, &c. Yet by reason of our many independent *timber-merchants*, we have more plenty than ever, and, I am told, much cheaper than usually it was wont to be; and the reason is plain, for when there is a great trade for a *commodity*, every body strives to get it; and he that can afford to sell *cheapest*, sells *most*, and gets *most*; wherefore he hunts out all places where he can get it cheapest, and likewise studies all the ways that may be to bring it home at the cheapest charge, and others strive as well as he; and at the places of growth they are at strife too who shall sell cheapest, that they may have the trade from their neighbours: and thus it will ever be, only in *commodities* that can be had from some one man, or one combination of men, and no where else: but here it is not so, we can have *timber* from divers places. But if his Majesty should be pleased to resolve to have none but *English timber* for his royal *navy*, what hurt, I pray, would it be to the kingdom, to fetch it more than twelve miles from a *navigable river*? What loss would it be, if when the *parliament* thinks fit to give the King six hundred thousand pounds to build *ships*, they, upon this consideration, should give seven hundred thousand pounds? Would it not be spent among our selves, and find employment for a great many cattle and *lazy people*? It might be the means to make more *rivers* navi-

278 A COLLECTION for Improvement
gable; and our bad roads, if possible, to be amended.

Another objection is, *we shall want wood for iron-works, flint-glasses, &c.*

This I scarce believe, for *billets, faggots*, and such like we may be, and are furnished withal from abroad, as well as with timber: but rather than fail, we may take Mr. *Evelyn's* and Mr. *Worlidge's* advice, and improve our barren lands and wastes in the inland counties.

A third objection is, *What shall we do for bark for tanners?*

To this I answer as before, the *inland* country is enough to furnish us; but if it were not, we might very well be supplied from abroad, it is only rasping, and breaking of it small, and the *freight* will amount to no great matter: and it is a great question with some, whether we are necessitated for *oak bark* to *tan* with, as our plenty makes us suppose. I have heard *tobacco-stalks* will do it very well: and Mr. *Evelyn*, in *chap. 3.* of the aforesaid *Sylva*, *pag. 27.* thinks, ' That the *cups* of our *acorns* would *tan leather* ' as well as the bark, and wonders no body ' makes the experiment. In *chap. 16. pag. 69.* ' the tops and loppings of *birch* is called Mr. ' *Howard's new tan.* In *chap. 25. pag. 127.* it ' is said, that the *cork-tree* hath, beneath the ' *cortex*, or *cork*, two other *coats*, or *libri*, of ' which one is reddish, which they strip from ' the *bole*, when it is fell'd, only; and this bears ' good price with the *tanner.* And in *chap. 30. pag. 177.* he saith They have in *Jamaica*, the ' *mangrove*

‘ *mangrove, olive*, and a third, whose *barks tan*
‘ much better than do ours in *England*, so as in
‘ six weeks the *leather* is fit to be employed to
‘ any use.

If these things be true, then I do not much question, but by enquiry might be found out, what quality in the *oak-bark* it is, that causes the *leather* to be *tan'd*; and if that be found once, we might, I believe, quickly find out a great variety of other things, fit for the same purpose.

The fourth *objection* is, *it will pull down the price of our other lands.*

What care I for that, if all together they will yield a greater employment, and yield any thing more: if this *objection* should be minded, we must forbear all other sorts of improvements, and the *fens* must be let into the sea again. But there is a way to remedy even this complaint, and one that we have experience of, *viz.* If the *parliament* will think fit to present the *King* with a month's tax of seventy thousand pounds once a year, to bear the charge of an allowance, as formerly, for the exportation of *corn*, for then it did cost the *King* almost as much, I am sure, in one year, upwards of sixty thousand pounds, for I have seen the account from the *custom-house*. Methinks, if any gentleman will promote a bill, this may easily be done, seeing it is so much for the *subjects* benefit; and if the country *gentlemen* will not encourage their *representatives* to it, by my consent, they shall not be pitied, although their *tenants* should fail in their payments.

A fifth and more material *objection* than all the rest, is, *that if our neighbours will confederate, we may be put to streights for a supply in time of war.*

As I said before, no greater streights, than to fetch a little farther from the *inland* countries. But, I pray, what reason is there for this our fear? It is plain, that the more we want wood, the better we may be stored; witness our great plenty in the *timber-docks*, and on the *wharfs* on the *river of Thames*, since the *fire*: and it is commonly said, that the *Dutch*, who have hardly a stick, but willows, growing in their country, are far better supplied with *wood* than most of their neighbours: and *box*, *lignum-vitæ*, *sassafras*, *logwood*, and a great many others we abound with.

It will be very hard if all the world should agree against us at once, and that profit should tempt none of them to betray the other; it doth not use to be so: neither are we, as I can hear, much concerned, for fear they should combine to hinder us of *masts*, *cordage*, *pitch*, and *tar*; and a stop of these, by their confederacies, may undo us, as well as a stop of *timber*. But I hope none of these will happen: before we make a war we shall supply our selves with sufficient stores, and then a *fig* for any shall dare to attack us.

Much more might be said on this occasion, but I am loth to tire my self, or you: yet pardon me a little to tell you, that although I have endeavoured to shew you what I think will be for the profit of the country; yet I am not unsensible, that if a man hath more money than he
needs,

needs, then, whatsoever honest thing delights him, is better to him than that money: therefore, for my part, I would encourage, rather than dehort country *gentlemen* to have about their seats *woods*, for ornament, shade and shelter: I would also allow them for *hedge-rows*, for fence and shelter to the *ground* and *cattle*, for I would have no place *waste*; and to what better use to put these *hedge-rows* I know not, unless we could be persuaded to fill them with *fruit-trees*; which I think much better.

Water-sides I also allow, where they hinder not the bringing up of *boats* or *barges*, for there will *oziers* for the *basket-man*, and other trees of quick growth, and great advantage for several *manufactures*, some *faggots* for our chambers; and the banks, by help thereof, will be well supported.

I also approve to have *woods* on such lands where nothing else will grow, if there be such; which I much doubt.

And *parks*, which although they are for the most part very ill husbandried, yet they generally belong to rich persons, and are not altogether without their use; particularly to their *owners*, they make or preserve a grandeur, and cause them to be respected by their poorer neighbours; they preserve and increase *venison*, a *rich* and *estimable* food for the greatest princes; and what bears good price, and keeps good friendship within the *cities*, *towns* and *villages*, they make a recreation, without which, most of our improvements, and nine parts in ten of our trades, are insignificant: they breed up young *cattle*, and are most excellent for rearing of *colts*; they very much improving on a hard ground, and a large circuit,

circuit, thereby exercising their heels and breathings. These *parks* keep among us an esteem for good *hunting-horses*, and would, if free from other excesses, preserve to their masters very great *health*, and good *complexions*, and may there, if any where, within the twelve *miles*, be increas'd *oaks*, for the *glory* and *strength* of our kingdom, and *acorns* to fat our *hogs* with; the beast-skins of these *parks* make us a great *manufacture*, and *bounds* in a *wood* are none of the least part of our pleasant *musick*. Many other advantages may hence accrue; but I think here are enough to make us allow of some *parks*, till a popularity, and want of good ground, doth urge the contrary.

Upon a serious consideration of all that hath been said, I think it will appear, that the destruction of our *wood* every where within twelve *miles* of a *navigable-river*, would be advantageous, both to the *private* and *publick wealth*, and that it will increase our *navigation*, *popularity* and *strength*. But however, I humbly submit it to the censure of all *honest* and *ingenious men*, promising that I shall be very ready to change my mind, whenever they will be pleased to shew me good reasons to the contrary: but if they cannot, and will still go on, to increase or preserve their *woods*, they must pardon me, and others, if we should happen to think that they are men void of reason, or that love their humours before their own profit, or their country's welfare.

In this, and all other of the like nature, I hope you will pardon the *failures*, and accept of the *good-will* of, Sir, your humble servant,
Ec.

A re-

A relation of the culture, or planting and ordering of saffron; by the honourable Charles Howard, Esq; extracted from the Philosophical Transactions, Num. 138.

S I R,

Although this account be already printed by the ingenious Mr. *Nehemiah Grew*, yet presuming it may be of great use, and fall into many hands, where those most excellent *treatises* will not, I having leave, offer it to you, as follows.

Saffron heads, planted in a black, rich, sandy mold, or in a mix'd sandy land, between white and red, yields the greater store of *saffron*.

A clay or stiff ground, be it never so rich, produceth little *saffron*, though increase of heads or roots, if the winter prove mild and dry; but the extremity of cold and moisture will rot them: so that the finest light sandy mold, of an indifferent fatness, is esteemed most profitable.

Plough the ground in the beginning of *April*, and lay it very smooth and level.

About three weeks or a month after, spread upon every acre twenty loads of rotten dung, and plough it in.

At *Midsummer* plough it again, and plant the *saffron* heads in rows every way, three inches distant one from another, and three inches deep.

The

284 *A COLLECTION for Improvement*

The most expedite way of planting, is to make a trench the whole length of the field, three inches deep with a spit-shovel.

The spit-shovel is to be made of a thin streight iron, ten inches long, and five inches broad, with a socket in the side of it, to put a staff or handle. Lay the *saffron* heads three inches distant in the trench, and with the shovel spit up three inches of earth upon them.

Observe this order in planting whole fields, whereby the heads will lie every way three inches square one from another : only paths or shallow trenches are to be left two or three yards asunder, which serve every year to lay the weeds to rot, that are to be weeded and pared off the ground.

As soon as the heads begin to shoot or speer within the ground (which is usually a fortnight before *Michaelmas*) hoe or pare the ground all over very thin; and take lightly all the weeds and grafs very clean, lest it choak the flowers, which will soon after appear; and are then to be gathered, and the *saffron* to be picked and dried for use.

The ground must be very carefully fenced from sheep or cattle, which by treading, break the *saffron* grafs, and make the chives come up small.

In *May* the *saffron* grafs will be quite withered away, after which, the weeds and grafs the ground produceth, may be cut or mowed off from time to time to feed cattle, till about *Michaelmas*, at which time the heads will begin to speer within the ground.

Then hoe, pare, and rake the ground clean, as before, for a second crop; the like directions
are

are to be observed the next year for a third crop.

The *Midsummer* following dig up all the *saffron* heads, and plant them again in another new ground (dug and ordered as aforesaid) wherein no *saffron* hath been planted, at least not within seven years.

The flowers are to be gathered as soon as they come up, before they are full blown, whether wet or dry.

Pick out the chives clean from the shells or flowers, and sprinkle them two or three fingers thick, very equally, on a double *saffron* paper. Lay this on the hair-cloth of the *saffron-kiln*, and cover it with two or more *saffron*-papers, a piece of woollen cloth or thick *bays*, and a cushion of *canvas*, or sack-cloth filled with barley-straw, whereon lay the kiln board.

Put into the kiln clean, thoroughly kindled charcoal, oven-coals, or the like, keeping it so hot, that you can hardly endure your fingers between the paper and the hair cloth.

After an hour or more, turn in the edges of the cake with a knife, and loosen it from the paper. If it stick fast, wet the outside of the paper with a feather dip'd in beer, and then dry the papers : turn the cake, that both sides may be of a colour.

If it stick again to the paper loosen it, and then dry it with a gentle heat, with the addition of a quarter of a hundred pound weight laid upon the kiln-board.

The *saffron* cake being sufficiently dried is fit for use, and will last good many years, being wrap'd up, and kept close.

The

286 *A COLLECTION for Improvement*

The best *saffron* is, that which consists of the thickest and shortest chives of a high, red, and shining colour, both without and within alike.

Saffron is oftentimes burnt, and in knots, spotted and mixed with the yellows that are within the shells.

It is usually observed that one acre doth yield, at the least, twelve pounds of good *saffron*, one year with another, and some years twenty pounds.

Good *saffron* is seldom or never sold at so low a rate as thirty shillings *per* pound, frequently at three pounds *per* pound, and upward: wherefore one acre bearing twelve pounds at forty shillings the pound, cometh to twenty four pounds *per annum*.

The gathering and picking of one pound of *saffron* is worth one shilling, which cometh to twelve shillings *per* acre.

The fire and care of drying may come to three shillings more, at three pence the pound; which is in all fifteen shillings.

The grass that is mowed and cut off the ground for the use of cattle, will be very near worth as much as will countervail the picking and drying the *saffron*, the soil being enriched, not only by the dung, but the *saffron* itself, as appears by the rich crops the ground yields for several years after, without any other manuring or improvement.

Sixteen quarters of *saffron* heads are sufficient to plant one acre: a quarter of these heads is usually sold in the place for ten shillings, which comes to eight pounds *per* acre.

Twenty loads of rotten dung laid on the ground may be worth forty shillings at twelve pence

pence a load for the dung, and as much for carriage into the field.

For thrice plowing the ground, twenty shillings.

For planting the heads about four pounds, which in the whole makes fourteen pounds, the charges of planting an acre, which will bear three crops.

So that all things reasonably computed, it appears, that an acre of *saffron* will be worth, notwithstanding all casualties, one year with another, over and above the fourteen pounds charges, for the first year's planting (at the least) twenty pounds *per annum* ; besides the great increase of the *saffron* heads, which will be as three for one.

The Kiln.

It consists of an oaken frame, lathed on every side, twelve inches square in the bottom, two foot high, and two foot square at the top ; upon which is nailed a hair-cloth, and strained hard by wedges, drove into the sides ; a square board and a weight to press it down, weighing about a quarter of a hundred.

The insides of the kiln covered all over with the strongest potters-clay, very well wrought with a little sand, a little above two inches thick.

The bottom must be lined with clay four or five inches thick, which is the hearth to lay the fire on ; level wherewith is to be made a little hole to put the fire : the outside may be plaistered all over with lime and hair.

TUESDAY, *Decem.* 11. 1683. NUM. IV.

The CONTENTS.

Enquiries relating to husbandry and trade, drawn up by the learned Robert Plot, L. L. D. keeper of the Ashmolean Museum, and professor of Chymistry in the University of Oxford, and Secretary of the Royal Society of London. An account of the manner of making Brunswick-mum. An account of a great improvement of mossy land, by burning and liming, from Mr. Adam Martindale of Cheshire.

Enquiries relating to Husbandry and Trade, &c.

S I R,

IN my former volume, *Num.* 1. p. 6, 7, 8, 9. I gave you some enquiries concerning agriculture, drawn up by that great philosopher and encourager of all useful learning, the honourable Robert Boyle, Esq; which I extracted out of the *Philosophical Transactions*, Numb. 5. pag. 79. to which enquiries I have received several answers, as about furzes in *Numb.* 2. pag. 28. in *Vol.* 1. Remedies against the uncertainty and loss

loss of crops, smuts, mildews, lodgings of corn, and its being eaten up by birds; from Dr. Robert Plot, in Numb. 3. p. 31, 32, 33, 34. Smuttiness in Corn, from Mr. John Smith in Numb. 5. p. 47, 48. The manner of improving land by marle; from Mr. Adam Martindale of Cheshire, Numb. 6. p. 55, 56, 57, 58, 59. As also a second account about marle, from the aforesaid Mr. Adam Martindale, in Numb. 11. p. 120, 121, 122, 123, 124, 125, 126. A great improvement of land by *parsly*, from Mr. John Worlidge of Petersfield in Hampshire, the author of *Systema Agriculturae*, *Systema Horticulturae*, and *Vinetum Britannicum*, Num. 12. pag. 136, 137, 138, 139. And in Numb. 2. of this second volume, pag. 33, 34, 35, 36, 37. There is an account from the Reverend R. G. of Barling, near Walsfleet in Essex, of a new manner of plowing, whereby he hath done as much in three days, with two small *bullocks* and one *man*, as his neighbours could do with four stout *horses*, and two *men* in eight days; or as much for five or six shillings, as used to be done for eight and forty shillings.

And besides these, by degrees, I hope to have several more *answers*, according as gentlemen, who wish well to their country, shall fall to the consideration of these papers; and that they may so do, I pray recommend all your friends to the perusal of those *enquiries*.

Now, that I may set other men at work, who may delight in things not there mentioned, I will give you some more *enquiries*, being what, I think, relates to my business of husbandry and trade; and they are extracted from the *enquiries* drawn up by the learned Robert Plot aforesaid,

290 *A COLLECTION for Improvement*

to be propounded to the most ingenious of each county in his travels through *England* and *Wales*, in order to their history of *nature* and *art*.

Concerning *Waters*.

Have you any *salt springs* in this county? To what uses put? And how ordered?

Are there any *medicinal writers* near this place, of any unusual *smell* or *taste*? And what effects have they wrought? Do they *tinge* the *stones* or *earth* near their *exit*, of a *rusty*, or any other colour? Do they lose their virtues in carriage or no? Or let fall any *sedement* in standing, and thereby become enervated? In general, what proportion hold the *waters* of this county as to *gravity* and *levity*, comparatively among themselves, and with the waters of other countries?

*Of these, it is probable, I may make good use, in order to the improvement of the place, as of Ep-
som, Tunbridge, Dullidge, Bath, &c. and also
in order to dying.*

Concerning *Earths* and *Minerals*.

What variety of *earths* are there in this country? And how lie the *beds* of the *mold*, *clay*, *sand*, &c. one above another? Have you any *sands* or *earths* of use hereabouts, such as *sands* for the *glass-houses*, for improvement of *land*, *fullers-earth*, *boles*, *peats*, *ochers*, *tobacco-pipe clays*, *black chalk*, *ruddle*, *umber*, *clays famous for brick*, or *tyle*, or other *earths* remarkable for their colour, weight, *smell*, *taste*, &c. What *marles* have you in this county? How deep do they lie from the *surface* of the *ground*? What the depth of
the

of HUSBANDRY and TRADE. 291

the *marles* themselves, and what their colour? Upon what *grounds* are they chiefly used, and at what time laid on? How many loads to a *statute-acre*? What *grains* will *marled-lands* bear best, and how many years together? How such *marled-land* is to be used afterwards? Is there any *cole* dug hereabouts?

Have you any *minerals* found or dug in this county, such as *sulphur*, *arsenic*, *orpiment*, *calamy-stone*, *black-lead*, *vitriol*, *alom-stone*, *cole*, *amber*, *jet*, *nitre*, *salt*? Or doth there any *naphtha*, or *petroleum* swim on the *water*, or distil from any *rock* hereabouts?

Concerning Stones.

Know you of any *stones* not common in this county; such as *hyacinths*, *emeralds*, *achats*, *jaspers*, *chrystals*, *emery*, *spars*, *marbles*, *serpentine*s, *manganese*, *magnets*, *etites*, or *eagle-stones*, *gold-stones*, *transparent pebbles*, &c.? Are there any *stones* found here curiously wrought by nature, either like *animals*, as *oysters*, *cockles*, *escalops*, *serpents*, &c.? Like *vegetables*, as *branches*, or *leaves* of *plants*, *melons*, *olives*, *apricots*, *peaches*, *pease*, &c.? Like *inanimate* things, as *spears*, or *arrow-heads*, *crosses*, *globes*, *stars*, *drops* of *water*, *cakes*, *sugar-plumbs*, *letters* of the *alphabet*, *geometrical figures*, &c.? What *quarries* of *free-stone* are there in this county? Are they of a *fine* or *coarse*, *grit*, *brittle*, or *tough*? Whether good *fire*, or *weather-stone*, or both? In what order do the *beds* lye? Do they dip or lye in *plano horizontis*? Whether better *surbedded*, in *work*, or laid as they grew in the *bed*? Are there any *quarries* of *mill-stones*, or *grave-stones*, &c.? of *lime-stone*, or *salt-stone* near this place, and

292 A COLLECTION for Improvement

what are the signs of their goodness or badness?—Are there any *alabaster*, or *quarries* of *marble* in this county? If so, of what *colour* or *hardness*, and whether lineated with *veins* of a different *colour* from the body of the *stone*? Whether it be apt to cleave one way rather than another.—Know you of any body that hath invented, or is master of any curious *plaster*, *cement*, or knows any excellent earthen materials, or artifice for flooring of *barns*, or other *rooms*, *garden-walks*, &c. that shall not crack, or wear much in a very large time? Or know you of any other materials of this kind, of excellent use in building, and wherein they excel?

Concerning Metals, &c.

Is there any *gold*, *silver*, or *electrum* dug or found in this county? Any *copper*, *iron*, *tin*, or *lead ores*? Any *bismuth*, *antimony*, *quick-silver*, *bell-metal*, *zink* or *spelter*, *zaffer*, *manganese*, *chrysocholla*, or *native green*, *cæruleum*, or *native blue*, *cinnabar*, *lignum fossile*, *amianthus*, *fossile-teeth*, or any kind of *ore* unknown to you.

Concerning Plants.

With what unusual plants doth this county naturally abound? What *vegetables* naturally flourish best in *sandy*, *chalky*, *claiety*, or *marly earths*, &c.? And what may be the supposed reasons why some plants will thrive best, where some others will not grow? What *vegetables* naturally prosper best (or at least will endure over *minerals*, or the *metallick soils* of this county? Or others that abound with such and such *vapours*?
What

of HUSBANDRY and TRADE. 293

What *salts* are most appropriate to each plant, and what quantity, the exceeding whereof renders the earth incapable of *producing* or *preserving* plants? Know you of any strange or prodigious *plants*, or *trees* extraordinary, either in their *growth*, *fruit*, *leaves*, or time of *blossoming*? Or have you any undescribed plants, or others of special note, naturally growing hereabout? What quantity of *timber-trees* have you here? and what trees be they that are accounted timber? What *rent* have you for *wood* and *timber*, and at what value *per hundred*, *load*, *coard* or *tun*?

Know you of any body hereabout skilful in *gardening*, that has observed what *manure* is most proper for this, or that natural *earth*, or what *earths* are best mixed together, and for what *plants* most agreeable? Has he observed what *insects* are peculiar to plants, and whether the same plants have not sometimes different insects, especially in dry and wet years? What are your usual means of *preserving* and *improving* *woods* in this county, or has any body any peculiar way of improving them here? At how many years do they usually fell their *underwood*, and *tallwood*, what parts of it for *fuel*, and what for uses, such as *axle-trees*, *bop-poles*, *hoops*, *stakes*, *burdles*, &c.? Whether do you draw your *woods*, or fell them together? which of these accounted best, and for what reasons?

Has there any body hereafter observed the diseases of *plants*, or knows ways of prevention or cure, especially of the *blebs* or *blisters* we find on the leaves of many *shrubs* and *trees*? Thinks he them infected from the *air* without, or by *juices* within, or by both? And when by one,

or the other, or both together? And for what reasons has he observed, that the *blisters* of some *plants* have *insects* in them; others *fungus's* on their tops; others that have neither? Knows he these *plants* distinctly, and whether these things be not so accidental, that they sometimes interchangeably alter? What are the diseases of your *timber* in this country, by what signs may they be known, whether any way to be prevented or cured? Can any body hereabout inform how it comes to pass, that of the seeds of many *plants*, such as *oak*, *elms*, *ash*, *beech*, *yew*, *juni-per*, *hemp*, &c. there will come some *plants* again that will never bear *seeds*? Or is there any body knows any other thing considerable concerning *plants*?

Concerning Husbandry.

How many sorts of *grain* are there sown hereabout? And first, how many sorts of *wheat* do you sow hereabout? Any *double wheat*, *red-bearded Kentish wheat*, *red-lammas* with ailes, *red-lammas* without ailes, the *red stalk wheat*, *white-lammas* with ailes, *white lammas* without ailes, *mix'd lammas*, *cone-wheat* with ailes, *cone-wheat* without ailes, *square-grey* with ailes, otherwise called *dunover*, *duckbill-wheat*, and *duke-wheat*, *square-grey* without ailes, *Aleppo-wheat*, *Poland-wheat*, *not-wheat*, *pendull-wheat*? Know you of any other sorts of *wheat* sown in this country, distinct from these? and for land, have you observed any of these, or other to be best; and wherein do any of them excel? What *barleys* sow you here beside the *common barley*? Have you the *rath ripe*, *conleard*, *spring of Livonia*, *winter*, *naked*, and *not-barley* sown here, or any other

ther *barleys*? If so, for what lands have you observed them best, and wherein do any of them excel?

As for *pease*, do you sow hereabout the *Henley-gray*, the *blue pea*, *Sandwich-pea*, *Hampshire kids*, the *horn grey*, *early-white*, *latter-white*, *blue* and *green pea*, *bowdies*, *red-shanks*, *cotswould pea*, *partridge pea*, *black-ey'd whites*, *small rath-ripes*, the *rose-pea*, the *horn-pea*, *large huscods*? And as for *beans*, do you sow hereabout the *great garden French beans*, *red* and *white*, the *middle sort*, *red* and *white*, the *field horse-bean*, *black* and *white*, the *least bean*? As for *vetches*, do you sow hereabout the *gore-vetch*, *pebble-vetch*, *winter-vetch*, *rath-ripe vetch*, *dilks*, or *lentills*? And as for *oats*, beside common *black* and *white*, do you sow any *blue-oats*, *naked-oats*, *bearded-oats* of *North Wales*, *Poland oats*, or any other *pease*, *beans*, *vetches*, or *oats* distinct from these? And for what lands have you observed any of these or others to be best, and wherein do they excel?

What unusual *grains* sow you in this county, such as *wold*, *woad*, *hemp*, *flax*, *linseed*, *rape* or *wild turnip*, *caraways*, *bastard saffron*? Know you any other such sown in this county, for what land best, how to be ordered, and wherein do they excel? How many sorts of *grasses* (the usual name for any *herbage* sown for cattle) do you sow here, such as *clover*, *sanctfoin*, *ray grass*, or everlasting *grass*, *lucern*, *buck-wheat*, *medic*? Know you of any other *grasses* sown in this county, distinct from these? If so, for what land best, how to be ordered, and wherein do they excel?

Has there any body hereabout found out any new improvement of *arable* or *pasture land*, or other curiosity in *husbandry*? as in *plowing*,

296 A COLLECTION for Improvement

sowing, harrowing, rowling, hoeing, hedging, ditching, planting, grafting, gardening? What variety of soils have you hereabout? Are they *sandy, gravelly, stony, chalky, claiety, maummy?* Have you any *light mold, red land, stonebrash, sour land, marish, boggy, fenny, or cold weeping grounds?* What particular preparations are used to each of these, for each kind of grain? With what kind of *manure* improved? When, how, and in what quantity is the *manure laid on?* At what seasons, and how often are each of these plowed for each grain, and how long are these several grounds let lie *fallow?*

How many sorts of *plows, carts, harrows, rolls, rakes, forks, boes, skrys, fans, shovels, spades, mattocks,* or other instruments of *husbandry* have you in this place, and wherein do they excel? How many ways of *sowing* have you here? How do you preserve your *corn* in the *fields* from *weeds, flies, birds, worms, moles, &c.*? Also from *blighting, smutting, mildewing,* and what are conceived to be the causes of these? How do ye order your *corn* when green, if too rank, &c.! Have you any particular ways of harvesting your corn, dressing it, or preserving it in the mow, or stores, from rain, heating, rats, mice, must, or other inconveniencies? Has there any body hereabout any new ways of ordering their *horses, oxen, cows, sheep, goats, hogs, &c.* in their feeding, working, &c.?

How are the abovementioned *soils* prepared, when they are used for *pasture, or meadow?* What are the several kinds of *grasses* naturally growing in such grounds in this county? And which are the best accounted of, and why so accounted? How do you preserve your *pastures* and *meadows* from *weeds, moss, sour grass, heath,*

fern, bushes, briars, brambles, broom, rushes, sedges, juniper, gorse, or furzes? What kind of *grass* is fittest to be preserved for *winter feeding*? And what *grass* is best for *horses, oxen, cows, sheep, goats, &c.*? What are the chief circumstances observed in cutting *grass*, and what in the making and preserving of *hays*? Know you of any body that has any peculiar way of *inning* or *draining marshes, bogs, fens*, or of destroying or improving *furzy, heathy, or broomy grounds*, or has any other improvement whatever in husbandry?

Concerning *Animals*.

Do you know of any body in this county, studious in *insects*, an observer of the works of *bees, silk worms, &c.*? or has any peculiar ways of ordering them? Is there any body that has been curious in observing the *origin, the perfection and corruption of insects*, their *diseases and cures*? Are there any *birds, fishes or reptiles*, peculiar to this county, and know you of any thing remarkable concerning them? Know you of any strange beast, *sheep, goat, dog, hog, horse, ox, cow, deer, &c.* of any unusual quality, or mix'd generation, of great age, or wonderful bigness, or any other *animal* that has been attended with any unusual circumstances?

Concerning *Arts*.

Is there any body hereabout that has invented any thing, or made any improvement in any of the *liberal, or mechanick arts*; in *physick, anatomy, astronomy, geometry, arithmetick, musick, architecture*? Are there any buildings hereabout, extraordinary

traordinary in the whole, or parts, such as *churches, colleges, town-halls, conduits, dwelling houses* of the nobility and gentry, *barns, stables, malt-houses, mills, stair-cases, chimney-pieces, windows, &c.* What trades are there peculiar to this place? Know you of any stupendious or curious *engines*? Is there any body eminently curious in this town, or any body that has any thing peculiar to himself in *clock-work, lock-work, carving, painting, graving, etching, dying, weaving, needle-work, straw-work*, or any other handicrafts? Where, by the way, let it be noted, that the undertaker of this design desires not to dive into the mystery of any trade, but only to represent matter of fact, and so many of the circumstances as may be communicated without discovery of the mystery.

Finally, if any body desire to be farther informed in the nature of this design, let him consult the natural history of *Oxfordshire*, already extant.

Thus much I thought fit to extract from the paper of enquiries, drawn up by the-aforesaid Dr. Plot.

Now in order to make my *Collections* profitable to the kingdom in general, and a great many men in particular, I hope, that all who have any kindness for this undertaking, will give their best assistance to, Sir, your most humble servant.

The manner of making mum, according to the direction recorded in the Town-house of Brunswick; and is a proportion for sixty three gallons.

THE water prepared must be boiled to the consumption of a third part at least, and brewed according to art, with seven bushels wheat-malt, one bushel oat-malt, one bushel ground-beans; and when it is tunned, let not the hoghead be too much fill'd at first. When it begins to work put into it,

Inner rind of fir-tree, three pounds.

Tops of fir and birch, one pound.

Carduus benedictus, three handfuls.

Flowers *ros-folis*, a handful.

Burnet, betony, marjoram, avens, penny-royal, elder-flowers, wild thyme, of each a handful and a half.

Seeds of *cardamom* bruised, three ounces.

Barberries bruised, one ounce.

Put the seeds into the vessel, when the liquor hath wrought a while, with the herbs also: and after they are added, let the liquor work over the vessel as little as may be. Fill it up at last, and when it is stopped, put into the hoghead ten new laid eggs, not broken, nor so much as cracked. Stop it up close, and drink it at two years end.

Dr.

300 *A COLLECTION for Improvement*

Dr. Egidius Hoffeman, added *water-creffes*, *brook-lime*, and *wild parsley*, with six handfuls of *horfe-radish* rasped to every hogthead: and it was observed, the *horfe-radish* made it drink more quick than the other, in which was none.

William Richardson, *merchant*, transcribed this out of the Town-house of Brunswick.

Our *English brewers* use not all these materials. They use *cardamums*, *ginger* and *sassafras*, which serves instead of the inner rind of *fir*, also *walnut rinds*, *madder*, *red-sanders*, and *enula campana*: and some make it only of *strong beer*, and *spruce beer*; the last of which, if any would give us the receipt, it would be very acceptable.

An account of a great improvement of mossy-land by Burning and Liming, &c.

S I R,

I Think it is not impertinent to your business to tell you, that in my opinion, a mighty improvement might be made of *mossy-ground*, in countries that abound with *lime*, above what is ordinarily known. To confirm which, I shall relate to you a story, which an honest gentleman of *Staffordshire*, some years since told me; and it was thus, so far as my memory is to be relied on.

He

He having accidentally set on fire about ten acres of mossy-ground (which burned to the very sand) in the common belonging to *W.* sent his teams six or seven miles off (to *Walsall*) for lime, which he mix'd with the ashes, and sowed the plat of ground with rye, much against the opinion of his husbandmen, whose objections and jeers he could not otherwise silence, but by a peremptory command to hold their peace, and observe his order. And the issue was, that tho' he was constrained to make a costly fence about it, that crop of rye cleared all the charges of the fence, lime, seed, and husbandry, with advantage to his purse; and besides, turned a barren piece of moss into a good close of land. I suppose, that upon a moderate account, the close may well be worth, for pasture alone (besides the benefit of plowing it sometimes) five pounds *per annum*, or very near, whereas I cannot think it was worth a tenth part of the money before this accident fell out, of firing it: for there is enough in our county to be taken as cheap as that comes to; and I my self would be glad of that rate for land which I judge much better, during my lease, for which I hold it with other ground that I have improved: tho' I am apt to think, no county about us (if any in *England*) charges the farmers more deeply with rent, proportionably to the probable profits to be made of the land, than this of ours. I am sure many of our farmers do not only say so, but make it to appear they speak as they think, by removing themselves with their families and stocks into other counties; of which, of late years, we have too plentiful instances. What advantages then might be made of some great mosses in *Lancashire*, and elsewhere, that lie

302 *A COLLECTION for Improvement*

lie near to *coal* and *lime-stone*, and therefore might well be spared, without making *fuel* dear, and improved at a very small charge, and for the present, yield little or no profit, save some *grig*, or *heath* for *sheep*, and young cattle to feed poorly upon; and this oft in peril of their lives: particularly, what abundance of this sort of ground lies within a few miles of *Clitherow* (the great staple for *lime*) which is good for little or nothing in its present condition, but to make the country thin of inhabitants. Accept this at present from

S I R,

Your Servant,

A. Martindale.



TUESDAY

TUESDAY, January 29. 1683. NUMB. V.

The CONTENTS.

An offer to make it appear, that it is the interest of the subjects of England, and much for the improvement of husbandry and trade, plentifully to supply their King: In a letter to Roger L'Estrange, Esq; Together with the value of the Roman Scitcerce, compared with our English coin now in use.

An offer to make it appear, that it is the interest of the subjects of England, &c.

Honoured Sir,

I Have here exposed my self to the censure of all my countrymen, and therefore shall want protection, and confidently presume, by my observations of your indefatigable industry for the peace and prosperity of your King, and not only his obedient, but also well-meaning deluded subjects; that you will readily patronize any thing that shall tend to the same end, which is the design of these papers. If you shall think favourably of them, for your sake, I hope all will peruse them; some out of good-will, and others,

others, that they may do as by your *observers*, pick faults: and if by any of these means my arguments therein shall be considered, I hope they will procure approbation. I thank God it was my good fortune to be born under a monarchy; and may this (as long as *sun* and *moon* continue) flourish: and I believe, a very good way for its so doing, is, to have it supported plentifully; but by so easy methods, as each member shall contribute its proportion, hardly to be felt, and thereby be much advantaged: and such ways, I strongly persuade my self may be found out.

I think this very pertinent to be inserted as a *letter for improvement of husbandry and trade*, because it will be a great wheel to set them both on going: and if in this, or any other of the letters that I have, or shall publish, I shall advantage my Prince, I shall have one of my great *aims*, and gain a *point* I believe I was born for.

S I R,

I shall not fill this paper with applauding your virtues, your *works* will do that: but without long preface come to my matter, and endeavour to prove what is abovementioned, *viz. That it is the interest of the subjects of England, and much for the improvement of husbandry and trade, plentifully to supply their King.*

In order to do this, I think it will be necessary to consider what it is the King will do with this plentiful *supply*; and the answer is obvious, that he will either *board* it up, or *spend* it.

It

If he hoards it up, I think it is one of the worst uses it can be put to, unless spending it in that which is sinful (because it is the blessing of God that maketh *rich*; and sin is not the way to get God's blessing) but yet, as bad as it is, when considered, it is likely it may not appear altogether so faulty, as at first it may be thought for.

For if we consider the King as the head of this *political body*, and the subjects the members of the same, then it will appear that the whole is nothing lessened by the head's having just what the members were wont to have: the body is of the same weight still.

But though this cannot be denied, yet I foresee that it will be objected, *that this body must needs have the rachites, or rickets, for the head will be too big; and there will be a diminution of the other parts, through want of a return to the members of what was sent above.*

I must confess, that if all that goes to the head were there to *stagnate*, and none should revert to the benefit of the *members*, there might be hazard of some ill things attending; but in this case I think it cannot well be, for the Prince must spend some showers, or else he cannot be supplied with necessaries fit for the maintenance of himself and his domesticks; and if he doth but that, and keeps for them a good correspondence with their neighbours, and gives them leave to use their heads, hands and feet, *viz.* their *understanding* and *labour*, this head may grow very great, and the members may increase proportionably, the body keep in perfect health, and all do well.

And thus we see it hath done in many places; *David* left a mighty treasure for the service of the temple, and yet you see his subjects were able to offer much too: and this you may well understand, when I shall shew you what it was that *David* left. I will transcribe the words of Sir *Walter Raleigh*, in his second book of the first part of the *History of the World*, Chap. 17. §. 9. pag. 417. 'It is written (*saith he*) in the 22^d of the first of *Chronicles*, ver. 14. that he left *Solomon* for the building of the temple an hundred thousand talents of gold, and a thousand thousand talents of silver, and of brass and iron passing all weight; which is more than any King of the world possess'd besides himself, and his son, to whom he left it; for it amounteth to three thousand three hundred thirty and three cart-load, and a third of a cart-load of silver, allowing two thousand weight of silver, or six thousand pounds sterling to every cart-load, besides threescore and seven-venteen millions of *French crowns*, or of our money, twenty three millions, and a thousand pounds.' This last sum, I suppose, is what is mentioned in the 29th chapter of the first of *Chronicles*, ver. 3, 4. Then *David* saith, *Moreover, because I have set my affection to the house of my God, I have of mine own proper goods, of gold and silver, which I have given to the house of my God, over and above all that I have prepared for the holy house.*

Even three thousand talents of gold, of the gold of ophir, and seven thousand talents of refined silver, to overlay the walls of the houses withal. Besides all this, I find in the former 22^d chapter of *Chronicles*, that *David* had also prepared timber,

of HUSBANDRY and TRADE. 307

timber, stone, and workmen in abundance, hewers and workers of stone and timber, and all manner of cunning-men for every manner of work, verse 14, 15.

Now, I say, notwithstanding that *David* had hoarded up all this treasure, yet his people lived so happily and plentifully under him, that the chief of the fathers and princes of the tribes of *Israel*, and the captains of thousands and of hundreds, with the rulers over the King's work, offered willingly.

And gave for the service of the house of God, of gold, five thousand talents, and ten thousand drams; and of silver ten thousand talents; and of brass eighteen thousand talents, and one hundred thousand talents of iron.

And they with whom precious stones were found, gave them to the treasure of the house of the Lord.

Then the people rejoiced, for that they offered willingly; as you may see, 1 Chron. chap. xxix. ver. 6, 7, 8, 9.

Now, whether this people that offered willingly in the ninth verse, were the commons that were inferior to the aforesaid great ones; or whether it relates to the aforesaid great ones I won't determine, because I would strain nothing, but I think, from what is said, it plainly appears, that even under this arbitrary and despotical government, the subjects lived mighty happy and richly, notwithstanding the King's being excessively rich, and a very great hoarder.

Solomon also hoarded up great riches; and although he spent much, yet he left a great deal behind him, witness the wealth that *Shishak* King of *Egypt* took away from King *Rehoboam*,

for he, as you may see in 1 Kings c. xiv. v. 26. Took away the treasures of the house of the Lord, and the treasures of the King's house, he even took away all; and he took away the shields of gold which Solomon had made.

Now what this treasure was we may see in some measure in 2 Chron. chap. ix. ver. 15, 16, 17, and 20.

And King Solomon made two hundred targets of beaten gold; six hundred shekels of beaten gold went to one target.

And three hundred shields made he of beaten gold: three hundred shekels of gold went to one shield.

Moreover the King made a great throne of ivory, and overlaid it with pure gold.

And all the drinking vessels of King Solomon were of gold, and all the vessels of the house of the forest of Lebanon were of pure gold.

None were of silver; it was not any thing accounted of in the days of Solomon.

In 1 Kings chap. x. ver. 17. it is said, *three pounds of gold went to one shield*, which I take to be the same as three hundred shekels, and put it down, that it may be the better reckoned.

What the treasure of the Lord's house was you may guess, by what *David* left for it, and by the description of the temple; particularly remember the utensils of gold, and the parts that were covered with pure gold; and we have no account at all; that any of this were meddled withal in *Solomon's* time, but reason to believe the contrary; for sure he would rather have parted with his shields, than have defaced his temple.

The complaint made to *Rheboam*, seems rather to be the effect of inconsideration and wantonness, than of any real cause they had for it: for *Solomon's* time was the top of *Israel's* glory; *silver* was like the stones in the street, for abundance; and they had no wars in his time, either to put them to charge or danger; neither were the *yoaks* so heavy, as to be thought worth while to reckon what they were; but God, for *Solomon's* sin, had divided his kingdom, and suffered this idle complaint to be the peoples pretence for the desertion of *Rheboam*.

But if it shall be objected, that *David's* wealth was not taxes laid upon his own subjects, but spoils taken from his enemies: Then I will ask, who provided first of all to fight with this enemy? it could not be done without charge; if they paid no tax, but like our trained bands, went all to war on their own charge, that charge, if it had been valued, would have amounted to a very great sum; and that they did go at their own charge, I have the opinion of the afore-said Sir *Walter Raleigh*, a little after my former quotation, viz. in p. 427. in these words.

‘ In those days and places there were no wintering camps in use, but at convenient seasons
‘ of the year Kings went forth to war, dispatching all with violence, rather than with temperizing; as maintaining their armies, partly
‘ upon the spoil of the enemies country, partly
‘ upon the private provision, which every soldier made for himself.

So many thousand at such a time, and so many at such a time, could not be kept for nothing. *Joab* in 2 Sam. c. xxiv. v. 9. numbred eight hundred

dred thousand valiant men in Israel that drew the sword, and five hundred thousand men of Judah, in all thirteen hundred thousand men. But in 1 Chron. xx. 5, 6. the number of Israel are reckoned eleven hundred thousand men that drew sword, and four hundred threescore and ten thousand men of Judah that drew sword; in all fifteen hundred and seventy thousand men, besides Levi and Benjamin, which were not counted.

These numbers, I say, or whatever part were used of them, could not be kept for nothing, beside the loss of their times.

Also it is to be considered, that at this time, in the reign of *David*, when they fought with little else besides *swords* and *spears*, their army might as aforesaid be managed. But how they could have done without making a publick *purse*, if they had an occasion for *great ordinance*, *powder*, *shot*, and such like on land; *ships* of war, and all belonging thereto at *sea*, for my part, mine eyes are not sharp enough to find out; and what the real difference is between this *bearing* their own *charge*, or paying so much money to *David* to bear it withal, I can as little see as the other, unless it would have enabled him with fewer men, well managed, to have done greater things, and have given liberty to the rest, to have added as much *wealth* to their country by *trade*, as ever he brought in by war.

Of *Solomon's* wealth it cannot be said as of *David's*, for although a great deal was brought in as *presents*, *tribute* and *merchandise*, yet instead of going to war, and bearing their own charges, he tax'd them, and kept up an army. For in Sir *Walter Raleigh's* words, 'He kept in garisons
'fourteen

of HUSBANDRY and TRADE. 311

fourteen thousand chariots (fourteen hundred in
 the text) and twelve thousand horsemen; four
 thousand *stalls* of *horses* he had for his *chariots*, and
 other uses, and for the twelve thousand horsemen
 of his guard; for the ten thousand *stalls* (forty
 thousand in the text) in the 1 *Kings* iv. are to be
 taken but for so many *horses*; whence in
 2 *Chron.* ix. it is written, but four thousand
stalls or *teems*, and in every *teem* ten horses,
 as *Junius* and the *Geneva* understand it.

And this I presume was a great reason of his
taxation, as well as his *wives* and *concubines*; and
 the advantages of these *taxations* were very great
 to that people; for all *Solomon's* time, in spite
 of *Jeroboam* and his other *enemies*, he kept them
 in peace, when as presently after his decease, by
 means of complaints of those taxes, they fell in-
 to divisions, and by almost continual wars, for
 many ages, devoured one another; which wars
 must needs spend their *wealth*, and hinder get-
 ting more. I think, by considering what hath
 been said, it will appear, that although *Solomon*
tax'd them, and *boarded* up a great treasure, yet
 the people lived very happy all his days.

Beside this, the great *Mogul*, it is common
 with him to amass great sums in *tanks*, which
 I take not to be only for delight of burying it.
 I am loth to think they take the pains they do
 for that silly pleasure, but without doubt, it is
 only treasure laid up in a place that is thought
 safe, against a time of need; and this I have
 reason to believe, because not long since, here
 was a great rumour, that the *Mogul* had opened
 a *tank* to pay his soldiers.

I must confess, I have not much enquired
 after the manner of the *Indian government*, but

we may reasonably think, that where there is so great and rich a Prince, every little body won't be making *war* on him; and peace is no small happiness to subjects; but we certainly know, that of late years his *trade* hath much encreased, and the *Banians*, and several other of his subjects, it is commonly said, enjoy to themselves a very great wealth, and their happiness is no way impaired, but rather improved.

If we come nigher home, we shall find that the present *French King* hath, when time was, boarded up great sums, and yet his *subjects*, for ought I can learn, have lived and thrived as well as they were wont to do before, and if you will believe what is said of him, as matter of fact, *much better*: for in a treatise touching the *French East-Indian trade*, translated into *English* 1676, and sold by *Robert Boulter*, at the *Turk's-head* in *Cornhill*, you will find the present *French King* thus represented: ' That since the year 1658
' he has struck off twenty millions a year in
' taxes, and since that, brought down the price
' of *salt*. In the scarcity of 1661 (which threat-
' ened *France* with an inevitable famine) he did
' out of his proper *coffers*, provide for the im-
' portation of prodigious quantities of *grain*, to
' relieve the necessities of his people, and par-
' ticularly of *Paris*, where the number made the
' evil the more dangerous.

In p. 30. it is said, ' That he (meaning the
' *French King*) has heretofore had great wars; his
' treasury drained, his *finances* mismanaged, but in
' the midst of his pressing necessity, can any say
' he fingered any publick money, or ordered
' the *receivers* of *consignations* to empty his *cof-*
' *fers* in the hands of his treasurers. In p. 31.
' it

of HUSBANDRY and TRADE. 313

‘ it is said, in his menage of affairs of state, his Majesty is *assiduous* and *indefatigable*; as to the ordering of his *finances*, he looks after it himself, and understands the whole business of his revenue, no man better.

In p. 33. it is said, ‘ I do not speak of his universal vigilance over all his dominions, but of the special care he takes for the protecting of his people in foreign *trade*: it costs the King at least four millions a year to entertain a liberty of ordinary commerce, both in the *East* and *Western ocean*. Upon this account is his charge of a *navy-royal*, to suppress the *Corfsairs* of *Algiers*, and another *squadron* to defend our *merchants* from the *Pirates* of *Galicia*, and all this for the support of a very ordinary traffick.

Beside what is said in this book, it is famously known, that he hath cut a great *river* from sea to sea: he hath improved their arts by magnificent *buildings* and *devices*: he hath encouraged the making of *point*, *tapestry*, and other manufactures, and not spared his own treasure, for the making his subjects the greatest *tradesmen*: he hath so much increas’d his *fleets*, that his *merchants* are every where respected, and he is now one of the great *marine* Princes of the world.

Now to come nigher home, I will consider our own King *Henry* the Seventh, the only Prince of *England* that ever gathered up great treasure to hoard, that I can learn of.

Of this great King I will give you some notes I have taken from his history, written by the great vertuoso, the right honourable *Francis* Lord *Verulam*, Viscount *St. Alban*.

And

And first of all, our Historian allows this King
 ‘ to be prone to covetousness, and in order to
 ‘ get *wealth*, he did hard things to some parti-
 ‘ cular men; especially while *Epsom* and *Dudley*
 ‘ were commissioned by him: I say, there
 ‘ were done such things in his *reign*, that if such
 ‘ should be done now, it would be thought very
 ‘ strange; but if they be considered with what
 ‘ was done in *Richard* the Third’s time, and se-
 ‘ veral *reigns* before, we shall find them to be
 ‘ tolerable. But in *p. 35.* of the edition of
 ‘ 1676. I find his *Chancellor*, in a speech to the
 ‘ parliament, use these words.

‘ Because it is the King’s desire that this peace,
 ‘ wherein he hopeth to govern and maintain
 ‘ you, do not bear only unto you leaves, for you
 ‘ to sit under the shade of them in safety, but
 ‘ also should bear you fruit of *riches, wealth* and
 ‘ *plenty*; therefore his *Grace* prays you to take
 ‘ into consideration matter of *trade*, as also the
 ‘ *manufactures* of the kingdom, and to repress
 ‘ the *bastard* and *barren* employment of monies,
 ‘ to *usury* and *unlawful exchanges*, that they may
 ‘ be (as their natural use is) turn’d upon com-
 ‘ merce, and *lawful* and *royal trading*. And
 ‘ likewise, that our people be set on work in
 ‘ *arts* and *handicrafts*; that the realm may sub-
 ‘ sist more of itself; that idleness be avoided,
 ‘ and the draining out of our treasure for *foreign*
 ‘ *manufactures*, stopped.

And in *pag. 38.* ‘ According to the Lord
 ‘ *Chancellor*’s admonition, there were that par-
 ‘ liament divers excellent laws ordained, con-
 ‘ cerning the points which the King recom-
 ‘ mended.

In pag. 43. it is said, ‘ The King thought he
 ‘ had not remunerated his people sufficiently
 ‘ with laws, which evermore was his retribution
 ‘ for treasure.’ And four lines farther, ‘ Certain-
 ‘ ly his times for good *laws* did excel; so as he
 ‘ may justly be celebrated for the best *lawgiver*
 ‘ to this nation, after King *Edward* the First.
 ‘ For his *laws* (whoso marks them well) are deep,
 ‘ and not vulgar; not made upon the spur of a
 ‘ particular occasion for the present, but out of
 ‘ providence of the future, to make the estate
 ‘ of his people more and more happy, after the
 ‘ manner of the *legislators* in ancient and heroical
 ‘ times.——He made a law for peace and
 quiet in the private possessions of the sub-
 jects——Another for population——Im-
 provement of land. Pag. 45. That *wines* and
woads from the parts of *Gascoign* and *Languedoc*,
 should not be brought but in *English bottoms*,
 bowing the antient policy of this estate, from
 consideration of plenty to consideration of
 power.

Another *monitory* and *minatory* towards *justices*
 of the *peace*, that they should duly execute their
 office,——and that a proclamation, which he
 had published of that *tenor*, should be read in
 open sessions, four times a year, to keep them
 awake——also laws for the correction of the
mint, and counterfeiting of *foreign coin* current.
 He made also statutes for the maintenance of
drapery, and the keeping of *woolls* within the
 realm.

In p. 90. speaking of an accommodation be-
 tween the *English* and *Flemish*, about *trade* that
 had been interrupted, it is said, ‘ But that that
 ‘ moved him most, was, that being a King that
 ‘ loved wealth and treasure, he could not endure
 ‘ to

‘ to have *trade* sick, nor any obstruction to conti-
 ‘ nue in the *gate-vein*, which disperſes that blood—
 ‘ At that time the *merchant-adventurers* (being
 ‘ a ſtrong company, and underſet with rich men
 ‘ and good order) took off the *commodities* of
 ‘ the kingdom, though they lay dead on their
 ‘ hands for want of vent: a ſign the *merchant-*
 ‘ *adventurers* (which I take to be the ſame as
 ‘ the *Hamborough-company*) had a *trade* with the
 ‘ *Flemings* at that time.

In p. 106. He gives you an account of ‘ one
 ‘ *Sebastian Gabato* a *Venetian*, dwelling at *Bri-*
 ‘ *ſtol*, that was earneſt for the diſcovery of the
 ‘ *West-Indies*, as you may ſee there more large-
 ‘ ly: and had not *Bartholomæus Columbus*, bro-
 ‘ ther to *Chriſtopherus Columbus*, been taken by
 ‘ *pirates*, in all likelihood, *England* had had the
 ‘ glory and profit of that diſcovery. Notwith-
 ‘ ſtanding, this ſharpened the King ſo, that be-
 ‘ ſide a ſhip ſent by *Gabato*, in the ſixteenth
 ‘ and eighteenth years of his reign, he granted
 ‘ forth new commiſſions, for the diſcovery and
 ‘ inveſting of unknown lands.

In pag. 119. after the marriage of his eldeſt
 daughter to the King of *Scotland*, it is ſaid,
 ‘ At this time the King’s eſtate was very pro-
 ‘ ſperous, ſecured by the amity of *Scotland*,
 ‘ ſtrengthened by that of *Spain*, cheriſhed by
 ‘ that of *Burgundy*, all domeſtick troubles
 ‘ quenched, and all noiſe of war (like a thunder
 ‘ afar off) going upon *Italy*.

In pag. 132. it is ſaid, ‘ That by tradition it
 ‘ is reported, that the treaſure this rich King
 ‘ left behind him, amounted to the ſum of
 ‘ near eighteen hundred thouſand pounds ſter-
 ‘ ling.

‘ He

of HUSBANDRY and TRADE. 317

‘ He did also declare in his will, that his
‘ mind was, that restitution should be made of
‘ those sums, which had been unjustly taken by
‘ his officers.

Beside these notes from the aforesaid great Lord, I cannot but take notice what is said of this King by Sir *Winston Churchill*, Kt. in pag. 286. of his *Divi Britannici*, printed at London 1666. thus.

‘ ‘ We find he was sometimes content to part
‘ with his own way and will (which perhaps on
‘ good reason he loved well) for the more or-
‘ derly administration of justice, leaving the
‘ disposition of his *mint*, *wars*, and *martial ju-*
‘ *stice* (things of absolute power) not to say the
‘ concerns of his unsettled title, which was yet
‘ of a higher and tenderer consideration, to the
‘ wisdom of his *parliaments*: and lest the thing
‘ called *property* should be thought to suffer in
‘ the least, he gave himself the trouble of hear-
‘ ing many causes at his *counsel-board*. It is pos-
‘ sible he did this with respect to the splendor
‘ of his court, and the profit of the city; to
‘ which, as he was always a *friend*, so by this
‘ dispatch of *justice*, while there was no other
‘ court sitting, he drew such a concourse of
‘ *clients to town*, as kept up a kind of term all
‘ the year round, and so quickened trade, that
‘ by adding to theirs, it increas’d his own
‘ wealth.

In answer to what he says of *Columbus*, I will refer you to what I have said above from the great Lord *Bacon*.

And Dr. *Heylin* in p. 1012. of his *Cosmography* printed at London 1665, saith of *Christopher Columbus* thus,

‘ On

‘ On this repulse (*viz.* from the state of *Genoa*
 ‘ in *anno* 1486) he sent his brother *Bartholomew*
 ‘ to King *Henry* the Seventh of *England*, who
 ‘ in his way happened unfortunately into the
 ‘ hands of *pirates*, by whom detained a long
 ‘ time, but at last enlarged: As soon as he was
 ‘ set at liberty, he repaired to the court of *En-*
 ‘ *gland*, where his proposition found such chear-
 ‘ ful entertainment at the hands of the King,
 ‘ that *Christopher Columbus* was sent for to come
 ‘ thither also. But God had otherways disposed
 ‘ of his rich purchase: for *Christopher* not know-
 ‘ ing his brother’s imprisonment, nor hearing
 ‘ any tidings from him, conceived the offer of
 ‘ his service to have been neglected, and there-
 ‘ upon made his desires known at the court of
 ‘ *Castile*; where, after many delays, and six
 ‘ years attendance on the business, he was at
 ‘ last furnished with three ships only, and those
 ‘ not for conquest but discovery.

And of *Cabot* in *pag.* 1014. the same author
 saith thus: ‘ To him (*viz.* *Vesputius Americus*)
 ‘ succeeded *John Cabot* a *Venetian*, the Father
 ‘ of *Sebastian Cabot*, in behalf of *Henry* the Se-
 ‘ venth of *England*, who discovered all the
 ‘ *North-East* coasts hereof, from the *Cape* of
 ‘ *Florida* in the *South* to *Newfoundland*, and *Terra*
 ‘ *di Laborador* in the *North*, causing the *Ameri-*
 ‘ *can Roytelets* to turn *homagers* to that King
 ‘ and the crown of *England*.

I think from these examples it may be con-
 cluded, that when Princes grow rich, their sub-
 jects ordinarily thrive with them: and that al-
 though a *Prince* should board up a great deal of
 money, yet it doth not follow that he, as the
 head, must be too big, or the subjects, as the

‘ members,

of HUSBANDRY and TRADE. 319

members, must languish, even so, as to make the body politic labour with the rickets.

But I pray, let us consider the consequences of a Prince his *boarding* up money; and first in relation to himself. *Secondly*, To his subjects.

And *first*, in relation to himself, supposing him of equal prudence to his neighbours.

This money will enable him to secure his people from all *affronts* can be put upon them (by those with whom they correspond) or at least *revenge* them: it will, in likelihood, make all his neighbour princes court his friendship, and think it their interest, if they quarrel, to choose him *umpire*. And these are such advantages, that it is hardly to be supposed that ever the people of *England* can offer their *sovereign* so great sums, that these will not repay.

But here is not all: if he loves money, that his subjects may add to his heap, he will be pushing on for new *trades* and new *discoveries*, as I have shewn in the history of *Henry* the Seventh, and shall in one of *Solomon*, that thereby he may enable his subjects to get more for him.

I must confess, there is one thing that a great treasure may tempt a Prince unto, that is, *ambitious wars*. But this we have no great reason to fear, because we have not many examples: our *plantations* and *trade* will employ our people, if they be too numerous; and it is the *English maxim*, that if they can keep the *sovereignty* of the *sea*, and be *umpire* to their neighbours, it is enough for them.

Beside, will a Prince that loves money quarrel without reason with a *foreign inland Prince*? If he should, and conquer, yet his heaps will soon be spent, and he will get but little; yet his subjects

jects having *peace* at *sea*, may trade as much as ever, and there is no great damage to them; but if with a *maritime Prince* he should *war*, his supplies will be stop'd by the stop of *trade*, and his gains will amount but to very little; it is hardly to be supposed that any King of *England* should ever do thus. *Henry* the Seventh, who perhaps had the greatest *board* that ever King of *England* had yet, when he was tempted (as I have heard) to prosecute his title to *France*, made answer, that it was a very fine country; but he thought *England* as fine a seat for a private gentleman, as any was in *Europe*.

As to the fear of *arbitrary power*, if it be meant by it that the *Prince* shall throw off all his *laws*, and make the present word from his mouth his *law*, do as *David* did to the *Amalekite*, I say, *fall upon him and slay him*. I think none but a madman will ever fear it; for will ever *Prince* run the hazard of displeasing, not only the *worst*, but *best* of his people, to gain that which he can much easier procure, by a way that shall stop the mouths of *bad*, and exceedingly please all the *good* men in his kingdom? I believe it cannot be shewn, that ever *Prince*, with the greatest force he could raise, could ever quiet a *fermenting people*, so well, and soon, as our present King hath done, only by a *declaration* that he would rule according to law.

This alone will be an example for future ages, and I hope an expedient, without any war, for ever to keep us quiet.

As to the fear, that if the King wants no money we shall have no *parliaments*, I think it causeless too; for I pray, why should a King who wants no money (and knows for that reason he can rule his *parliament*) not oblige his people

people in those things that will do him no prejudice.

It is true, we have not had many examples of this kind to try how it would be: I think of none but *Henry* the Seventh, and in his time it was that *England* began to flourish, especially in *sea-affairs*, for then, as I have said above, was *Cabot's* and other *voyages*.

One thing more I have to say, that is, if the King should hoard up much money, it would for the present make it *dearer*, that *deariness* would make it be brought in more plentifully, and that would make it more plentiful than it was before. Thus we see daily, that by reason of the great exportation of money by the *East-India* and *Turky* companies, we swarm with money more than ever, although it is a kind of hoarding till the time of return, as likewise is all our plate; and it is certain, the more money we export, the more plate we use, the more silver and gold comes in; as will be testified, not only by our *companies*, but also by most of our *bankers* and *merchants*, that are any way concerned in the affair; and of the truth of this, I would not question easily to make proof, and so may any body else, that will take but a little pains.

From what hath been said I think it will appear, that although hoarding of money is ordinarily one of the worst uses a Prince can put his money to, yet if he will take none but fairly by the law, and what his subjects shall willingly present unto him, his hoarding of that up will never hurt them, especially in a country where the laws are so mild, as to let them know what they must pay their *King*, and what they may call their own, and gives them leave to use what

honest *industry* or *contrivance* they will to get more:

But by reason that we have but one single example of any of our Kings that have made a great hoard, and no ill came by it, we have very little reason to think we shall be prejudiced thereby now; wherefore I will leave this part of my observations, and go to the second propos'd, *viz. What will be the consequence if the Prince should have a great deal of money given him, and he again should spend it?*

It must necessarily follow, that if the money be spent, it must be in things necessary for the welfare of the kingdom, or in things superfluous.

If in things necessary, I am sure there is no good subject but will be of my mind, and no ill one but will, I think, appear so, from the teeth outward; but what the necessary things are, a great many honest men, as well as others, differ in, some through ignorance, some through want of consideration, and some through misinformation. I make bold to mention some things, that I think very necessary for the welfare of the kingdom.

In the first place, although I would wish to have the *train'd bands* of the kingdom to be the chief *militia*, yet I would not wish the King (through want of a little army maintained by, and paid from himself) to be in the power of any *faction* or sudden tumult: I would not, for want of such, that we should run the hazard of such an *insurrection* as *Massianello's*; neither would I desire (especially in a discontented time) to see such another *procession*, as was not long since, on Queen *Elizabeth's* birth-day, when they burn'd the *Pope* in effigy; and the King to have no body about him, but such as we commonly

monly call his *beef-eaters*. No, no, had it been so, for ought I know, we had not now had a King to give money to, but more likely such as would have taken it from us, in spite of our teeth; then the longest sword, not the safety of the people, would have been the great law. For my part I am much of *Machiavel's* mind, that that Prince that holds the sword of *justice* in his hand, and expects some fear, shall seldom or never want love from his subjects; but on the other side, that Prince that through want of power shall think to make his subjects fear him, by means of loving and kind actions and expressions, shall fail of his expectations.

But for all this, whether the guards be enough, or want augmentation, I won't determine, but leave it to wiser heads; yet this I am sure on, that if some of the *foot soldiers* were made *troopers*, it would be better for *husbandry* and *trade*, because a greater sum of money would be hurried about, we should have a greater breed and market of good horses, and a greater consumption of hay and provender; and if *London*, and the *country* about it for twenty miles shall be against this, I won't say, they understand not their own interest, but they must give me leave to think.

The second thing I think necessary is a good *fleet* of *men of war*, and of these in the time of greatest peace; I would wish a considerable number to be always abroad or cruising: I would be sorry the *Algerines*, or any other should say, 'They are unprovided, let us fall upon them.' I believe the charge of such a fleet to prevent a war, will be far better *husbandry* than to fall actually into a war and conquer, it is a maxim in physick,

*Principiis obsta, sero medicina paratur,
Cum mala per longas convaluere moras.*

Which I will thus *Englisk*,

*All wars prevent, early your ships go rig,
Lest by delay your foe should grow too big.*

Examples of this there are abundance, but King *Edgar* is famous, for I find in *Hakluyt's Voyages* printed at *London*, 1598. p. 7. in one place, 'That he yearly set out 4800 ships, viz. 1200 to each of the four seas.' This he cites from *Flores Historiarum*, and a little below he saith thus. 'This peaceable King *Edgar* (as by antient records may appear) his summer progresses, and yearly chief pastimes were, his sailing round about this whole isle of *Albion*, guarded with his grand navy of four thousand ships.' And for this he quotes *Ranulfus Cestrensis*. A great many things are there said highly to his commendation. He was called *Edgar the Peaceable*: I suppose, because none dare quarrel with him, by reason of his prudent care and government.

Mr. *Selden*, in his *Mare Clausum*, englished by *Marchamont Nedham*, and printed at *London*, 1652, in the second *Book*, p. 274. brings King *Edgar* in a charter or deed, by which he settled revenues on the cathedral church of *Worcester*, Anno 964. saying these words. 'By the abundant goodness of Almighty God, who is the King of Kings, I, *Edgar*, King of *England*, and of all the Kings of the islands, and of the ocean lying round about *Britain*, and of all the nations that are included within the circuit

of HUSBANDRY and TRADE. 325

‘ cuit thereof, supreme *Lord* and *Governor*, do
‘ render thanks to the same Almighty God, my
‘ King, who hath enlarged my *empire* thus, and
‘ exalted it above the royal estate of my proge-
‘ nitors; who, although they arrived to the
‘ monarchy of all *England*, ever since the time
‘ of *Athelstane* (who was the first that by force
‘ of arms subdued the *English*, and all the na-
‘ tions that inhabit *Britain*) yet none of them
‘ ever attempted to promote their empire be-
‘ yond the bounds thereof. But the divine good-
‘ ness hath favoured me so far, as beside the
‘ *English Empire*, to enable me to subdue all the
‘ kingdoms of the islands in the ocean; with
‘ their most stout and mighty Kings, even as
‘ far as *Norway*, and the greatest part of *Ire-*
‘ *land*, together with their most famous city
‘ of *Dublin*: all which (by God’s grace and
‘ assistance) I have subdued, and made their
‘ necks to stoop under the yolk of my com-
‘ mand.

Dr. *Dee*, in the time of famous Queen *Elizabeth*, wrote a book in *folio* to this purpose: and *Henry Stubb*, in his *Farther Justification of the present War against the United Netherlands*, printed at *London* 1673, between pag. 79 and 86, shews you a great deal of good matter to this purpose.

And in the aforesaid *History of Henry VII.* pag. 28. it is said of him. ‘ *A fame of war* he
‘ liked well, but not an *atchievement*;’ for the one he thought would make him richer, and the other poorer.

The third thing I suppose necessary, is to live in honour and reputation at home: and this he may in a great measure do, by keeping the reins of government indifferent straight, by hav-

ing such *guards* on foot, and *fleets* abroad, as is before mentioned : but I am sure his necessitous over-good husbandry is no way to increase it. The King is the father of his country ; but for his children to come to his house and find no bread ; and as our *English proverb* is, *To be more likely to break their necks than their fast*, is none of the ways to aggrandize his honour ; it doth nothing correspond with the antient glory of the *English*, which was, that none should go from them, but should have cause to praise their hospitality. But I will not altogether condemn this change, because perhaps it may be thought good policy, rather to let every one shift for himself, than to depend on others ; but the court hath not now such good opportunities to oblige the country, nor the country so many good ways to understand the good designs of the court. Neither is the King's not paying his servants the way to increase his honour ; for although some wise men will be sensible of their *benefactor* and *benefits*, although their cause be very remote, yet the major part of people judge of things only just as they appear before them, and they from whom do come their money, shall be greatest in their esteem.

As for his exchequer, and other great debts, I will not determine whether it is best they should all be paid, or no ; but I very well know, that if his Majesty were able constantly to pay the interest thereof without delay, it would be a very great comfort to a great many of his loyal subjects, and perhaps satisfy them as well as payment ; although I think were I concerned in that *affair*, I should earnestly endeavour to have such members of parliament chosen, as would ea-
gerly

gerly busy themselves to have that great debt discharged.

A fourth thing I take to be necessary, is his having a great esteem in foreign courts; and although his power of doing benefits or diskindnesses is the main matter considered in such cases, yet the splendor of his ambassadors is no small means to gain him a reputation; for it is outward shew that ordinarily gains the populace, and encourages them more readily to respect and trade with his subjects.

All the money that is spent toward the attainment of three of these necessary things, and a good part of the fourth (*viz. embassies*) reverts, and is spent among the King's subjects: and I hope, if it be spent for such good uses, and they have it again, they will never think much of it; and I strongly persuade my self, that those who seriously enquire into the vastness of such expences, will hardly think their burdens grievous.

I shall in the next place consider the court as spending money superfluously, *i. e.* spending more than needs must in building or adorning houses, fine cloaths, race-horses, gardens, pensions, and such like; and, I say, the more money we give for these uses, the better it will be for us: in order to prove which, I pray consider the consequences.

His Majesty at a great charge hath lately repaired and beautified *Windfor-castle*, which of necessity must have employed a great many men, which must have been idle, or have taken away the work of some other, had not this been; for although I can easily see how (beside these workmen that were immediately concerned) many others were employed to supply them with

necessaries; yet I can in no wise see, that by reason of this, other works were lessened: if so, then it must follow, that this is the cause of employment for more people. If this be granted and urged, *we are never the richer, because it is only among our selves, and that adds nothing to the nation.* Yet it cannot be denied, but that what strangers spend extraordinarily (which is a great deal) upon viewing this will be a gain; and that by the same rule, if it be no gain, it can be no loss; wherefore if we can have such *fine houses* without damage, would all the old ones were soon pulled down. But although this working within our selves will be no gain directly, yet collaterally it will be very considerable; and to illustrate this, perhaps hardly a better way, than to represent to you some of the actions of the wise King *Solomon*.

This *wise Prince*, when he came to his throne, God was pleased to offer him what he would ask, and he asked *wisdom*; which pleased the Almighty so well, that it was granted, with an affirmation, that none before was, and a promise, that none after should be so wise; and as a farther reward of that his request, was promised *wealth* and *honour* upon the same terms, as in 2 *Chron.* i. But in 1 *King.* iii. 13. it is said, *So that there shall not be (or, bath not been, as in the margin) any among the Kings like unto thee all thy days.* The story at large may be seen in the aforesaid chapters.

My business will be to enquire by what means it was that God gave *Solomon* his great *wealth*; and I believe I shall find it to be by no *miracle* or *war*, but by a prudent *management* of *husbandry* and *trade*: for although God had promised to *Abraham* and his *seed* the land they afterwards

terwards enjoyed, yet they had but little of it for many ages after his death. When they came from *Egypt* and the *wildernefs*, it is true they received *lands, cities and towns*: but after what manner they enjoyed them may be seen in the book of *Judges*; for after *Joshua's* death, the *band of the Lord was against them for evil where-ever they went*, *Judg. ii. 15.* And they were then, and were to be plagued with the nations *Joshua* left among them, as in the same *chapter*. For instance, in the third chapter, they served *Cushan Rishathaim, King of Mesopotamia eight years, and were delivered by Othniel*, by whom they had rest forty years. Afterwards they served *Eglon the King of Moab, eighteen years, and were delivered by Ehud a Benjamite*, and had then rest fourscore years. And *Shamgar* also delivered *Israel*.

In the fourth *chapter* they were sold to *Jabin, King of Canaan*, and he mightily oppressed them twenty years, and they were delivered by *Deborah* and *Barak*; and the land had rest forty years; as in the next *chapter*.

In the sixth *chapter* they were delivered to *Midian* for seven years, who oppressed them very sore: at this time they were fain to make dens in the *mountains, and caves, and strong-holds*. These *Midianites* were so bitter, that (when the *Israelites* had sown their corn) *they, with the Amalekites, and children of the East, came and encamped against them, and destroyed the increase of the earth, even to Gaza, and left no sustenance for Israel, neither sheep, nor ox, nor ass*: and *Israel* was greatly impoverished, till they cried unto the Lord, who delivered them by *Gideon*; as may be seen in the seventh *chapter*.

In the ninth *chapter* you have an account of *Abimelech's* conspiracy and murders, and a civil war that ensued upon it. In

In the tenth *chapter* you have an account of *Tola*, of the tribe of *Issachar*, and *Jair*, a *Gileadite*, who judged *Israel* successively forty five years (I think, in peace) but after this, for their ill doings, they were sold into the hands of the *Philistines* and children of *Ammon*; and part of the *Israelites* were oppressed eighteen years, and the rest sore distressed.

In the eleventh *chapter* they were delivered by *Jephthah*, in whose time also many *Ephramites* were destroyed, as in the twelfth *chapter*: and *Jephthah*, *Ibzan* of *Bethlehem*, *Elon* a *Zebulonite*, and *Abdon* a *Pirathonite*, judged *Israel* in peace (for what appears to the contrary) one and thirty years.

In the thirteenth *chapter* the *Israelites* were delivered into the hands of the *Philistines* forty years, and were helped by *Sampson*, who judged *Israel* twenty years; as in *chapter* sixteen.

In the seventeenth *chapter* there was no King in *Israel*, and every one did what was good in his own eyes.

And in the twentieth *chapter*, the *Israelites* by a civil war lost forty thousand; and *Benjamin* was almost quite extirpated. In the time of these judges there was also a famine; as appears in the first verse of the book of *Ruth*.

In the times of *Eli* the priest things were bad enough; his sons were very ill; the *Ark* was taken; the *Israelites* overcome by the *Philistines*; and old *Eli* broke his neck.

In the time of *Samuel* the *Philistines* were worsted; and a King was desired, and God appointed to them *Saul*, and declared him to them (not by election, but lot) as in 1 Sam. x. 21.

All *Saul's* time was a time of trouble; one while so low, there were but two swords in his kingdom; and he had war against *Moab*, *Ammon*,
Edom,

of HUSBANDRY and TRADE. 331

Edom, Zobah, the Amalekites; and against the Philistines was a fore war all his days; as in the fourteenth chapter.

At last, *Saul* fighting against the *Philistines*, lost his army and his sons, and he and his armour-bearer kill'd themselves.

From this short *historical account* it will appear, that to the death of *Saul*, this people of the *Jews*, in relation to wealth, were very inconsiderable: indeed, they were arrived to that, which they might think would be a settled way of government; and, I believe, some arts began to take place, beside what were for necessity; the men had not only arms, but the women appeared glorious; witness *David's* advice to them in 2 *Sam. i. 24. Ye daughters of Israel weep over Saul, who clothed you in scarlet, with other delights; who put on ornaments of gold upon your apparel.*

I must confess *David* brought in a great deal of wealth, as I have shewn before, having continual victories over his enemies. But they that will consider the probable gains by war, and that which comes by a peaceful trade, will hardly think they deserve a comparison. We have a little instance in the case of *Jamaica*; and in likelihood *David* got no small part of his wealth by husbandry: for *Sir Walter Raleigh*, in the aforesaid chapter about *David's* wealth, saith,
' Much land doubtless he gained by conquest
' from the *Canaanites* and *Philistines*, beside those
' fruitful vallies near *Jordan*, in *Trachonitis* and
' *Basan*, and the best of *Syria*, and other coun-
' tries bordering on the *Israelites*. These *demains*
' belike he kept in his own hands, and with his
' infinite number of *captives* which he took in
' his wars, which were not able to redeem them-
' selves,

32 A COLLECTION for Improvement

‘ selves, husbanded those grounds for his greatest
 ‘ advantage. For it is written, 1 *Chron.* xvii.
 ‘ that *Jehonathan* was over his treasures in the
 ‘ field, in the villages, in the cities, in the towns :
 ‘ that *Ezri* was over the labourers that tilled his
 ‘ ground ; *Simei* over the vineyards, and *Sabdi*
 ‘ over the store of the wine ; *Baal-Hanan* over
 ‘ the olive-trees, and *Joash* over the state of the
 ‘ oil : also that he had *herdsmen* that had charge
 ‘ over his cattle, both in the highlands and in
 ‘ the plains ; over his sheep, camels and asses.’
 And this custom was common among *Kings*,
Pharaoh, *Uzziah*, and others there mentioned.
 ‘ Now concerning *David*, it is not unlikely
 ‘ but that those captives, which were not em-
 ‘ ployed in husbandry, were many of them
 ‘ used by him in all sorts of gainful professions ;
 ‘ as the ancient *Romans* in like manner used their
 ‘ slaves.

He also speaks of a poll of fourteen pence a head, of every man, rich or poor ; which, if so, was a great tax. But since in *Holy Writ* there is only mention of *Joab*’s numbering the people, but of no money, I will refer you to his arguments ; I am willing to be as short as reasonably I can ; but I must take notice, that he thinks a great part of *David*’s wealth that he left, to be the wealth of the sanctuary which had been collecting since they came from *Egypt*, and in all these disasters had never been meddled with.

By these ways, it is true, did *David* leave a mighty treasure ; but the main of it was not left to *Solomon*, for it was wholly dedicated to the service of the temple, although it was very good seed-corn for *Solomon* to draw a plentiful harvest from ;

of HUSBANDRY and TRADE. 333

from; the employment it gave his subjects was very considerable.

And now seeing *Solomon* had this seed of a *wealthy harvest*, he had God's promise that he should be rich, and have a super-abundant wisdom. Let us consider how he acquired his own great riches.

As I have noted before, I find no miracle; it was only his prudent management. It is likely, that although *David* might (as the great *Knight* saith above) employ some of his *captives* in trade, as well as the rest in husbandry; yet it doth not appear that the *Israelites* were much employed in manufacture or merchandize, neither is it likely they were, from what is said before. *Solomon* must be, I won't say, the beginner, because of the *tabernacle*, but the great pusher on, the restorer, or almost the beginner, or some other word, what you please, near it: and some of the manners he did it, I find to be thus.

When *Solomon* came to his throne, by 1 *King. ch. iii.* it looks as if he quickly made affinity with *Pharaoh* King of *Egypt*, and took his daughter to wife; and it is like he did so, because (as the said Sir *Walter* observes) some of the workmen that *Solomon* employed in building his temple were the *vassals* of *Hiram*, and of *Vaphres* King of *Egypt*, whose daughter he makes *Solomon's* wife to be; and *Solomon* began his temple in his fourth year, 1 *Kings chap. vi. verse 37.* Without doubt, this great *Queen*, at marriage, and afterward, had great pomp and attendance, which necessitated a great trade.

This great *King*, at *Gibeon*, offered to the Lord a thousand *burnt-offerings*, as in 1 *Kings chap.*

334 A COLLECTION for Improvement

chap. iii. ver. 4. And in *ver. 15.* besides *burnt-offerings* he offered *peace-offerings*, and made a *feast to all his servants*.

In the fourth *chapter* there is an account of his great *Princes*, and twelve *officers* to take care of victuals for the *King* and his *household*; and his daily provision was *thirty measures of fine flower*, and *threescore measures of meal*, ten fat *oxen*, and twenty *oxen* out of the *pastures*, and a hundred *sheep*, besides *harts*, *roe-bucks*, *fallow-deer*, and *fatted fowl*.

He had *forty thousand stalls of horses* for his *chariots*, and *twelve thousand horsemen*, with *barley* and *straw* for the *horses* and *dromedaries*. I refer you to an account of this before.

Another great means of his wealth was, his *learning* and *philosophy*; without doubt he was a great *vertuoso*. He spake three thousand *proverbs*, and his *songs* were a thousand and five: he spake of *trees* from the *cedar* to the *byssop*, of *beasts*, *fowls*, *creeping things* and *fishes*.

How should *Solomon* come to know the nature of these things? Surely it was not by *instinct*, for no such thing appears; neither can I believe he copied other writings, or took things upon trust; that would have been below the honour of so great a Prince, that was so greatly fam'd for his wisdom. If none of these, then surely his *philosophy* was experimental; there is proof enough of it in *Ecclesiastes*. But I do not believe that he went himself a simpling for the *plants* and *animals*, but rather that he had delicate *gardens* for his *plants*, *parks*, *ponds*, and *repositories* for the other *matters*; and if he had not *telescopes* and *microscopes*, *chambers* for *anatomy*, and *laboratories* for the *analizing* of *simple bodies*; surely his natural *philosophy* was but
very

very lame, and our present learning doth much exceed it: but be it as it was, what *Solomon* did must needs employ a great many people, and it got him a great renown; for in the last *verse* of this *chapter*, it is said, *There came of all people to hear the wisdom of Solomon, from all Kings of the earth, which had heard of his wisdom.*

Another means of *Solomon's* wealth was his magnificent *buildings*: these were so great, that in probability they found employment (*directly*, or *consequentially*) for most of his idle people: for, for his *temple* he employed upwards of one hundred eighty three thousand people, one hundred and fifty three thousand of these were strangers, but he paid them, and fed them with the product of his own land, and made it equivalent, or more beneficial to him, than if all that he had wanted had grown in his own territories. For *Solomon* gave *Hiram* yearly *twenty thousand measures of wheat, and twenty measures of pure oil*, 1 *King*. v. 11. But in 2 *Chron*. ii. 10. it is said, he would give him of *beaten wheat, and of barley, of each twenty thousand measures; and of wine and oil, of each twenty thousand baths*. What these *measures* were it is not material to enquire; without doubt, it was enough to feed the workmen; and, it is probable, to pay for materials also: and this must needs employ a multitude for its production and carriage; and another multitude to supply the suppliers; and so to the end of the *chapter*. We may something guess at this, by the bustle that was made in our own country in time of war, only to supply a fleet for a few months with thirty or forty thousand men, and at a time when our trade hath been interrupted, and a great many
diverted

diverted from their ordinary employments: but here was no divertisement from other employments, only from making of swords and spears; and that trade for some years had been useless too.

Well, what was the necessary consequence of this great bustle and building? Why, of necessity it made a great city, and that of necessity must cause a great many new wants and superabundancies; and these must certainly increase artists, and all these, for a supply of provision, must, without doubt, employ proportionably more people than are employed to supply the *citizens of London*; for we have a great deal brought by water, a carriage that employs but few; but there conveniencies were not many such, they were forced to have it by *land carriage*.

This *temple* was not like our fleet, a work of a *summer*, two or three, but it was seven years and upwards a building, as in *1 King. vi. ver. ult.* Beside the building of this great edifice, it was fill'd with abundance of rich utensils; and when all was finished, *Solomon* dedicated his *temple*, and offered no less than two and twenty thousand oxen, and a hundred and twenty thousand sheep, all, we must suppose of the *best*, the *worst* were not fit for *offerings*; at ten pounds an *ox*, and forty shillings a *sheep*, it would amount to four hundred and sixty thousand pounds *sterling*, beside *drink* and other *necessaries* to such a feast; and when the *priests* were settled in their courses, the ordinary and extraordinary offerings were exceeding great. By reason of these they could not choose but always have great stocks of cattle. Good God! What a trade to this happy people did these things of necessity afford! And

what would they have had, if the *foreign trade*, which *we* or the *Dutchmen* have, had been joined to this; or rather, might not we join his magnificence to our trade? I see no impossibility of the matter; nay, a great probability, if we would our selves, is plainly delineated in my *imagination*; and I am no lover of mad roamings, but of truth and sobriety.

Truly, I am almost a weary to recount the great actions of this *Prince*; but I can't forbear but to hint what Sir *Walter* hath collected to my hand in *pag.* 424, and 425. I do but hint.

After the dedication of this *house of the Lord*, *Solomon* fortified *Jerusalem* with a *treble wall*, and repaired *Hazor* and *Gaza*; he built *Berobon*, *Gerar* and *Millo*; as also *Megiddo* in *Manasse*, on this side *Jordan*, and *Balak* in *Dan*; also *Thadmor*, which he bestowed great art and charge on, in respect of which he raised tribute through all his dominions, besides a hundred and twenty *talents* of *gold* received from *Hiram's* servants; *Solomon* offered him twenty towns near, or in the *Upper Galilee*, which he refused, therefore the territory was called *Chabul*.

These refused towns *Solomon* fortified, and made a journey into *Syria Zobah*, and established his *tributes*. He then visited the border of all his dominions.

From all which I must observe, according to the intent for which I have here epitomized this *history*, that beside the advantage that great circulation of wealth brought to divers particulars, it collaterally brought in a very great wealth to the generality.

For without doubt, beside for the love of his wisdom came many to see his magnificence, it

is the nature of people to be desirous to see new curious things; witness the many journies are made to see *Audly-End*, *Hampton-Court*, and *Windsor*, the houses of our nobles, and some of our famous churches, the theatre and colleges at *Oxford*, and the rare chapel and colleges at *Cambridge*, and *Henry the Seventh's chapel*. What numbers, for little else run from hence to *France* and *Italy*. I have heard, that the travellers in *France* is the best trade that belongs to the country: this flocking of strangers to *Jerusalem* could not choose but cause them to be provided with a multitude of merchandizes; and it was the interest of strangers to carry some away with them. However, for provisions and necessaries a great deal of money must needs be left behind; but beside supposition, the matter of fact is, that he began his trade to *Ophir* in the fourth year of his reign, or little after; for the pillars of the temple were made of *almug-trees*, brought from *Ophir*, 1 *King*. x. 12. and the ships went once in three years, and they brought four hundred and fifty talents of gold at one time, beside other things; and I see nothing to the contrary, but this trade held all *Solomon's* reign, which was forty years, which might make twelve voyages.

Also, it is likely that *Solomon's* subjects had ingross'd the trade of *Egypt*, for they had *horses* and *chariots*, *linen* and *yarn*, at a price; and it was through their means that the *Kings* of the *Hittites* and of *Syria* were thence accommodated, 2 *Cbron.* i. 11, 12. From hence, I think, it will plainly appear, that the collateral advantages of a good circulation are very considerable.

I think

of HUSBANDRY and TRADE. 339

I think these instances that I have brought from this magnificent wise *Prince*, and great *experimental philosopher*, the peaceful *Solomon*, will be sufficient to answer such as shall have contrary apprehensions, especially if they be *Englishmen*, for they generally revere the *Scripture*; and to confirm these, and convince others, I could at large shew you what hath been done in some other places: but lest it should be too tedious for those who cannot see at large, or have not the *leisure* or *humour* to do it, I will hint some *examples*; and first from the *old Romans*. Dr. *Hakewill*, in his *Apology of the Power and Providence of God in the Government of the World*: printed at *Oxford*, 1627, in pag. 345, and forwards, gives instances enough. In p. 346. 'Two pieces of plate cost *Lucius Crassus* one hundred thousand *sesterces*.' Another had a *drinking cup* for wine, made of one entire gem or precious stone; one *murrin-cup*, sold for fourscore thousand *sesterces*. *Petronius*, who had been *Consul*, broke one that cost three hundred thousand. *Ibid*. They had tables made of *citron-wood*, full of *knots* (I presume, our *olive-wood tables* are somewhat in imitation) one cost fifteen thousand *sesterces*. *Seneca* himself, though *severe* and *stoical*, had four hundred of these *citron-tables*; I won't suppose them each of that value. In the time of *Claudius*, a *slave* had a *silver charger* of five hundred pounds weight, and eight more attended it, weighing fifty pounds a-piece. *Vitellius* had one that cost a million of *sesterces*, p. 348. *Vitellius* was feasted at one time by his brother, with two thousand of the choicest *fish*, and seven thousand *fowl*, p. 353. *Vitellius* had a dish of *meat* very costly; and *Æsop* the *Tragedian* had one that cost him six hundred thou-

land *sesterces*, pag. 354, and 355. *Caligula*, with all the invention of himself and friends, could not find the means of spending the tribute of the *Provinces* at one supper. And *Heliogabalus* was very excessive, *ibid.* *Asinius Celer* laid down for one mullet, at least six thousand *sesterces*. *Lucullus* of a sudden treated *Tully* and *Pompey* with a supper that cost five thousand crowns, pag. 356. Some have given for two pigeons four thousand *sesterces*, pag. 362. In the time of *Tiberius*, three mullets were sold for thirty thousand *sesterces*, p. 363.

Our author reckons these things as crimes; and I cannot deny but they might be such, the ill designs of the managers made them so; but that they were ill, *per se*, of themselves, I believe it will be too hard a task for any one to prove; if they can, let them do it: I am, for my part, very loth to be led by the nose with, it is commonly said so. It is good arguments should convince men. I pray (seeing my author, in p. 365. saith, 'That they (meaning the Romans) 'as far exceeded us in this way (meaning of their excess) 'as we come short of them in 'riches and dominion:') Why might not they send for their provisions beyond their territories, as well as we use *sturgeon*, *caveare*, *anchovies*, *mangoes*, *coffee*, *tea*, *sugar*, and many things else that we have from distant places? And was it ever thought a crime simply to use these things? No, sure. If I have ten times the wealth of another, why may not I treat my friend at the charge of a piece, as well as he at a dinner of two shillings? I suppose, none that are most scrupulous will gainsay it, lest some of their own associates should be found guilty. The great feast

feast of *Solomon* was not tax'd as a crime; and although I will not deny but excess may (as my author in the aforecited place, saith) *decrease* our strength, stature, age and duration; yet it is the abuse, not the good use of God's blessing; neither are we obliged, for fear of a temptation to excess, to avoid God's creatures, particularly honey, though *Solomon* advises we should not eat too much.

My author in the same place saith, 'It is better to supply them that want necessities, than to pamper our bodies in superfluity and riot.' I grant it; but it is far better to relieve them that can work, by employing them, than it is to give them money to keep them in idleness: and whether this, their high living, did not find livelihoods for thousands, that in likelihood might otherwise have been in a low state, I appeal, almost, to any body: I think, in this discourse above, I have proved it; and of this subject I have spoken already, in *Num. 5.* and *Numb. 6.* of my first volume of these *Collections*.

These matters of the *Romans* I must not leave yet; something of building. *Scaurus*, when *Ædile* built a magnificent theatre, able to receive eighty thousand persons to sit well at ease: What this might cost is not mentioned, but so much of the surpluse of the furniture provided for it (besides the daintiest part of it used at *Rome*) was burnt at his country-house, as came to an hundred millions of *sesterces*; yet this piece of building was scarce to endure for a month, pag. 367.

Such a piece of work was *Caligula's* bridge: and of like nature were those buildings set up by the command of *Caracalla*, *ibid.*

A permanent amphitheatre began by *Vespasian*, but finished and dedicated by *Titus*, was so large, that it contained only upon the steps or degrees, sufficient and easy seats for eighty seven thousand; so as the vacant places beside might well contain ten or twenty thousand more, *p.* 368. The furniture thereof was excessive. *Nero*, instead of sand, strewed the yard thereof with dust of gold, *pag.* 369.

Their baths were large and expensive, *p.* 372. Their temples in *Rome*, four hundred and twenty four, and, without doubt, very magnificent. Their *capitol* was very rich, in which *Augustus* bestowed upon the seat of *Jupiter* sixteen thousand weight of gold, and five hundred times an hundred thousand *sesterces* in jewels, *pag.* 374. Upon the gilding of it alone, was spent above twelve thousand *talents*, *pag.* 375. Next to this was the *pantheon*, the temple of honour, of fortune, of the city, strangers, and of peace, inferior to none; the greatest and fairest of all the works in the city, the most sumptuous in ornaments of gold and silver; upon this temple were bestowed all the rarities which men before travelled through the world to see; of all choice pieces, the most excellent were laid up here, *p.* 376. Their statues were numerous as their citizens, and of marble, ivory, silver and gold. *Ibid.* *Commodus* had one of gold, of one thousand pound weight. Their private houses were also very great, a kitchen of two acres of ground, *p.* 377; and as consequents, thither they called the most skilful architects of *Greece* and *Asia*, and all the parts of the known world. *Craffus* bought ten pillars for one hundred thousand *sesterces*, *pag.* 379. The glory of the *capitol* was but a trifle, in comparison of *Domitian's*
own

own house, p. 381. And Nero's own house, which he named *Domum Auream*, was very rich, p. 382. *Caligula* strived to excel, *ibid.* Their beds, their chariots and furniture were of gold, and richer: their kitchen-vessels were of plate, p. 383. *Lucius Lucullus* gave two talents of silver for a picture; and *Hortensius* for another, gave one hundred forty four thousand *sesterces*, pag. 384. *Lucullus* had by him at a time five thousand cloaks, p. 387. and ten thousand *sesterces* was given for one cloak, *ibid.* Their rings were numerous and costly, p. 389. *Lollia Paulina*, *Caligula's* widow, had as many jewels on at one ordinary feast, as cost four hundred hundred thousand *sesterces*, pag. 390. *Julius Caesar* bought one pearl for *Servilia*, the mother of *Brutus*, that cost him sixty hundred thousand *sesterces*, *ibid.* Their looking-glasses in height and breadth were answerable to their bodies, p. 391. Beside their adornment. Their number of servants were like armies, p. 394. Their gifts and expences were large. *Caligula*, in less than a year, consumed seven and twenty hundred millions of *sesterces*, that *Tiberius* had laid up, p. 396. *Clodius*, a private man, dwelt in an house that cost one hundred forty eight hundred thousand *sesterces*, p. 397. I think it may here also be granted, that a home circulation was the cause of bringing into these *Romans* an excessive treasure. To this day *Rome* fares the better for those structures: many are the pounds that travellers yearly spend there to see them. They do the like to see the fineries and splendor of *France*; and since our King's return, our fine city, and other fine buildings, have cost no small expence from strangers in viewing them.

Have not the monies the court have had improved and increas'd among us many trades? Yes, sure; and for instance, a great deal of lace, both with silver, and gold, and plain; rich silks, with gold and silver flowers; and to that degree, that the silver and gold wyre-drawers, that not many years since were leaving off their trades, as being so bad, that they would not keep them, are now the best sort of handicrafts-men in the town, and all that they can produce, can hardly satisfy their customers; and the silk-throwsters are full of employment. *Carving* we outdo the world in, even the *French King*, if he will have a rare piece of work, must send to Mr. *Gibbons* for it. I have seen a piece for him, wherein was a point-cravat in wood, that would vye with the curious needle-work. *Tapistry*, I am told, we make as good as any in the world: and had not the needs of the court discouraged Mr. *Pointz*, in all likelihood we had made a great step in that trade by this time. Whether any excels us in painting I know not. When the King came in we bought our looking-glasses, and in a great measure our drinking-glasses, from *Venice*; but now by the fashion of using glasses in coaches, and other good means, we easily enough serve our neighbours. Many other advantages accrue from this fountain, the court; which if they, and the necessary consequences were reckoned up, for my part, I am apt to believe, that all the taxes we have paid would appear trivial to them.

Several things we have lately learn'd to make, have stop'd, in some measure, the importation from abroad, and not only so, but we also with such serve our neighbours; a specimen whereof you may see in the accounts of exportation of goods

goods I took from *Custom-house bills*, in *Num. 14.* and *15.* of the first volume of these *Collections*, as *silk, aquavite, sixty tun a week at least in London, pearl-barley, babies, chocolate, coaches, maps, refined sugar, cyder, bottles, jugs, clocks, watches, camlets, iron-guns, perukes*, and true will appear the motto,

Sol orbem radiis, & Rex illuminat urbem.

*The sun by his bright beams the earth doth chear:
And Princes favours, cities great do rear.*

If these things be so, which I take to be undeniable, then, were I a parliament-man, I should be very willing to give my consent for a farther increase, which will be by supplies.

But methinks to all this I hear some objections, which will be necessary to be considered; which are,

First, That although the giving to the King a great deal of money, if it be spent again among us, be but like the reciprocation of water from the earth to the clouds, that from thence it may descend in rains and dews to refresh the earth; yet it may happen, as sometimes it doth in rain, *that some only receive its benefits*: an instance whereof was once in *Hampshire*, in a dry time. A man offered a parcel of hops, standing for thirty pounds, a shoulder of mutton, and a capon: the thirty pounds were bid, but the rest would not be given, and so the bargain broke: afterwards came a shower on these very hops, and no where else about, so that these hops were sold for six hundred pounds.

Such

Such a case as this, I must confess, may often happen in the circulation of money, upon one may come a large shower. But suppose it so, I pray what will this man do with it? Why, he usually buys land, and then the money disperses, as well as if he never had the fingering of it; and the man from whom he hath the land, if he hath its price for it, is not grieved. Perhaps he may live generously or extravagantly: if so, all trades are encouraged, as I have shewn in *Num. 5. Vol. 1. of these Collections*: or he may join with others, to improve some foreign trade or plantations: witness the stocks of the nobility and gentry in the *East-India, Guinea, and Hudson's-Bay companies*, the plantations of *Carolina, New-York, &c.*

If the city by any of these means get money, they presently live better, and consume more of the country provisions and manufactures, take their poor into their services, and not seldom put them into a capacity of being very considerable; and oftentimes in exchange do give themselves and money, they become country gentlemen, and there spend the income of their estates; and often, by the help of their cash, are the best improvers the country meet with. I believe it would puzzle any man to shew the person which turns but five pounds a year, that he hath reason to believe, doth not finger some of the money that descends from the King.

Another objection will be, that if our Kings should have great sums of money given them, it might tempt them to slight the advice of their people, and in time grow up to a tyranny.

I will not say, but this is possible, but it is the unlikeliest thing in the world: for was it ever known,

known, that a Prince, when his subjects were in good humour, and were willing to supply him with what he could reasonably desire, that he should then study to disoblige them? No, sure, I think it can hardly be imagined, we rather see the contrary; it is for want of money they set their wits at work for to raise it, and all about them set their wits on the tenters also, how they may, though by the extremity of the law, increase the revenue: and rather will Princes so be supplied, than to have parliaments that shall think their supply and quiet no part of their business. It was want of supply that made the *Christian Emperor* lose *Constantinople*: it was necessity that brought *France* to the extremity, that forced the parliament to yield the King power to raise what supplies he thought fit, which he keeps ever since: it was the necessities of *Charles* the First that was the forerunner of our civil wars; and it has been the plentiful supply granted to our present King in the beginning of his restoration, that made such a harmony between him and his people, that they hardly cared for being asunder; and they both were in contest who should be kindest, the one to grant privilege, or any thing could be ask'd by his subjects, for their profit; and the other, what in any wise could be requisite to support the honour of the Crown: our statute-book will prove all this: then was there no fear of arbitrary government, nor of the people desiring to invade the prerogative. The consideration of this, methinks, should change the thoughts of such parliament-men, if any such there be, who think, the only way for their often sitting, is to keep the King bare.

We

We have the least reason imaginable to fear our King's hurting us, by being over rich; for I can learn but of two that were so, viz. *Henry VII.* and *VIII.* and in the reign of the first began the common's wealth, for then were *Cabot*, and the *voyages* I have shewn already; and the trade at distance thence has it *date*, &c. The second spent the money left him by his father briskly, and by his pompous tournaments and shews, encouraged the trade at home; and under neither of these Princes did the people, as I can learn, lose any privilege.

Then it will necessarily follow, that if reason be a conclusion from experiments or premises, we have no reason to fear any damage from our Prince, if he lives plentifully, because we have no precedents, that any Prince by that means did hurt us.

The sum of what I have said is this: if the head, by having what the members were wont to have, be no prejudice to the whole body: if the head's growing great will not bring the rickets, but of necessity the rest of our members must grow proportionably with it: if *David's* great wealth was so far from hurting his subjects that it enriched them, and *Solomon's* wealth did the like; as likewise hath that of the *Mogul*, the present *French King*, and of our wise King *Henry VII.* with the addition of helping us to new discoveries, new manufactures, and such like; and withal, if it keeps us in peace, and from offence by enemies: if for the King to have power enough to preserve him at home in peace and safety, and a fleet in imitation of *Edgar the Peaceable*, and the famous Queen *Elizabeth*, to keep our seas from all annoyances: if
for

for our King to live in honour at home and abroad, to pay his debts, and make much of his subjects, be necessary: if the subjects of *Israel* were happier under rich *Solomon*, than they were for the most part under the poor Judges: if *David's* wealth caused him to encourage husbandry, and *Solomon's* found employment and trade for all his people; and his wisdom and philosophy made him renowned both far and near, and drew rich strangers to spend their money in his country: if his buildings were magnificent, and the consequence thereof a great home and foreign trade, that continued all his life; and that, by the help of his taxes, kept him from war: if his great expence in offerings, kept them always well stored with provisions, and no less made an inland trade; and if the fortifying his country kept up his esteem: if the great magnificence and expence of the *Romans* made them renowned over the world, procur'd them most of its curious artists, increas'd their trade, and thereby enabled them for greater expences; and the ruins of it cause a great trade still: And if the like is done in *France* and *England*, according to the proportion of their expence; if the great gettings of some single persons hurts very few, but does good to abundance; if the richer the city of *London* grows, the better it is for the whole country of *England*; if plentiful supplies be the means of frequent parliaments, freedom from oppressions and arbitrary government, and the means to have good laws; if there be no instances that ever we had hurt from enriching our Kings, but much by impoverishing them (as involving both the honour and safety of the nation in the consequences thereof:) Finally, if

a large

350 *A COLLECTION for Improvement*

a large swift current of money in a trading nation be a necessary forerunner of a great foreign trade, and all these things have been, and may be gotten by a plentiful supply, and that supply shall hardly amount to so much as the expence of a fly to catch a trout; then I hope these papers will not be altogether waste; and you, Sir, and I, shall yet live to see what I dare say is the desire of both our hearts, *viz.* The *King* in great *honour, plenty and peace*, and his subjects the richest and happiest that the sun shines on.

I thought not at first to have been so long, but know not what I could well have left out; for what is not so well as it should be, I hope you will pardon, your truly *loving friend*, and most *humble servant*,

J. H.

Of the value of the ROMAN Sesterce, compared with our English Coin now in use.

BEcause I have often in these papers mentioned the *Roman Sesterces*, I think it convenient to give you an account thereof, and I will do it in Dr. *Hakewill's* words, mentioned at the latter end of his *preface* to the book I fore-mentioned thus: ‘ I held it requisite, for the better
 ‘ understanding of those sums, by such who are
 ‘ not acquainted with the *Roman coins* in this
 ‘ table to express the value of the *sesterce*, and
 ‘ withal to reduce some of their most noted sums
 ‘ to our *sterling*; that so the reader, desirous to
 ‘ know

of HUSBANDRY and TRADE. 351

know any particular sum, may either find it expressed in this *table*, or easily find it out by proportioning the sum he desires to know, with the nearest unto it, either above or under.

The *Sestertius* was among the Romans a coin so common, that *Nummus* and *Sestertius* came at length to be used promiscuously, the one for the other; so called it was *quasi Sestertius*, because of three *Asses* it wanted half a one, and is thus commonly expressed *III S*, or thus *HS*, by which is understood two *Asses* and an half. For the value of it, ten *Asses* make a *Denarius* or Roman penny, so termed, because it contained *Dena Æra*, which were the same with their *Asses*, so as the *Sesterce*, containing two *Asses* and an half, must of necessity be found in the *Denarius* four times; now the *Denarius* being the eighth part of an ounce, and an ounce of silver being now with us valued at five shillings, it follows from thence, that the value of the *Denarius* is seven pence halfpenny; and consequently, of the *Sesterce* being the fourth part thereof, penny, halfpenny, farthing, half-farthing.

Sesterces

352 A COLLECTION for Improvement

Seftetces are worth in *English money*.

	ol.	o3s.	1d.	ob.
Twenty				
A hundred	0	15	7	ob.
Five hundred	3	18	1	ob.
A thousand	7	16	3	0
Five thousand	39	01	3	0
Ten thousand	78	02	6	0
Twenty thousand	156	05	0	0
Fifty thousand	390	12	6	0
A hundred thousand	781	05	0	0
Five hundred thousand	3906	05	0	0
A million	7812	10	0	0
Five millions	39062	10	0	0
Ten millions	78125	00	0	0
Twenty millions	156250	00	0	0
Fifty millions	390625	00	0	0
A hundred millions	781250	00	0	0
Two hundred millions	1562500	00	0	0
Five hundred millions	3906250	00	0	0
A thousand millions	7812500	00	0	0
Twenty seven hundred millions	21093750	00	0	0

A Talent is 750 ounces of silver, which after
five shillings the ounce is 187 pounds.

TUESDAY

TUESDAY, June 16. 1683. NUM. VI.

The CONTENTS.

The culture and cure of Safflower, from Henry Hall, Esq; An account how to rear cattle, from Mrs. E. H. in Lancashire. The way they fat Calves at Tring in Hertfordshire. The way they fat Lambs for London market at Hadly in Hertfordshire. Directions about Bees. An offer to make it appear that this kingdom will thrive more, and the manufacturers live better when provisions are dear, than cheap. The manner of making Bricks at Ebbisham in Surrey.

*The culture and cure of Safflower, from
Henry Hall, Esq;*

S I R,

IN compliance to my promise, I here send you the best account I can at this present of *safflower*: for when I came to look over my papers, I found, through inadvertency, I had left some behind me in the country: but what you find here defective, please to let me know; and

at my return, I will endeavour to give you farther satisfaction.

Safflower is a *drug* that usually comes from *Germany*, and is chiefly cultivated about *Straßburg*: here it is much used by *silk-dyers*, who give a good price for it, which encouraged a gentleman of my acquaintance to procure some seed from thence, which he sowed in some grounds, not far from this town, with so good success, that notwithstanding several discouragements he met with, he sent an agent purposely to get a considerable parcel of seed, which was disposed of in several places; some small quantity I got to make some experiments, but recommended for the sowing of a quantity, a piece of ground in the valley of *Eversham* in *Glostershire*, belonging to a sister of mine, who the year before had from this ground a crop of wheat; the ground was a mix'd sand, of about fifteen shillings *per acre* value, and was then dressed, as is there usual in that country, for *barley*, only it had a harrowing extraordinary, for the better and finer lying of it. This piece of ground, consisting of about twenty five acres, was taken for two years by an adventurer in this seed, at the rate of twenty five pounds *per acre*, in consideration that this plant is said to be a great impoverisher of land: he sowed his seed in *April*, and gathered the flower in *August*, which having cured, was put into bags, and sold at *London* for ten pounds *per pound*; a price, he said, much below his expectation: but at that rate, by the best calculation we could make, he gained above thirty shillings *per acre*, clear profit, all other charges discounted, as the rent of the ground, and all labour, excepting the price

price of the seed, which he would not impart, but magnified at an extravagant rate. There was also a plentiful return of seed, which had it been well managed, would have amounted to a considerable value, perhaps as much as the *flower*, which, for want of experience, was a little too timely gathered, and at a greater charge than needed; neither was it so carefully cured, as it ought, which much impaired the price.

This flower, in my opinion, is improperly called *saf*, or *zafflower*; for the seed is the same we call *carthamus*, and is cultivated after this following manner.

The ground being prepared and made fine, the seed is sowed in *rills*, as *pease* hereabout *London* are most usually sowed; but this at a greater distance, that with more conveniency it may be hoed and cleansed from weeds; besides, it must be sowed very thin, for it is a strong plant, and requires room to spread, one stalk setting forth seven, ten, or twelve heads of buttons, all which bear flowers: the exact quantity to an acre, for want of my notes, I dare not affirm, but to the best of my remembrance, it was about five pecks to an acre. After it is come up about six inches in height, the ground must be well cleaned from weeds; from which afterwards, for the most part, the plant defends itself, but if once risen, they must be carefully weeded out; other looking to it needeth not, until the flower groweth ripe, which is known by its colour, for then it will be of a deep *orange-tawny*; it ripened here in the beginning of *August*.

The *flower* is thus gathered: such hands as can be cheapest got are made use of in this work, as women and children, who with little spud knives pull the flower off the buttons, which

they put into the baskets they carry on their left-arm, which, when filled, they empty into other great baskets; in them it is carried home to be cured. The ripest of the flower must first be gathered, the others will ripen successively; the work may take up a week, or ten days, before all will be fit to gather. The planters aver, that the gathering the flowers doth not impede the ripening of the seed; but in this I am a little doubtful, for some experiments I have made, have evinced me of the contrary. After the flowers are gathered the seed ripens, which is known by the cleaving of the buttons, or some other trial: then they cut the plant, and allowing of it time to dry; having bound it in sheaves and bundles, they house it, and at convenient times thrash it. This field, by estimation, might yield a hundred and forty bushels, for only some part of it was thrashed, the residue was put up in a stack in the open air, but thatched, to preserve it from wet.

There was no other ceremony in the curing of this flower than the laying of it on a clear floor, where the air had a free access: it is layed about two inches in thickness, and stirred three or four times in a day to accelerate the drying, and avoid fermentation, which would spoil the colour of the flower. In the performance of this, I think a *stove* would with more advantage, and quicker dispatch, prepare the flower for packing; which when thorough dry, they do in canvas bags.

What I have here writ is from the relation of some of the planters, and the person that sowed the ground here mentioned, and gathered the flower; in which I should have instanced many other particulars, had I permission to mention

the undertakers, who at that time being in pursuit of some other designs (to them in appearance of much greater concern) wholly neglected this, and falling under some misfortune, the design of prosecuting this improvement was quite laid aside; and I have not heard of any one else that hath since undertaken it.

But since the sowing of this seed, and propagating of the plant may arrive to a very great improvement, if rightly managed, I will offer some *experiments* of my own, for the encouragement of this *plantation*, and which seem to me to obviate the main *objections* I have heard made against it.

The *first* is, that the *flower* ripening in the time of the *wheat harvest*, hands are then very hard to be got, which occasions the *charge* to exceed the *profit*; for in that season the women and children employ their time in leasing, or rather stealing of corn, and will not then undertake any other work, although tempted with extraordinary wages.

The *second* is, that the *English* seed is not so good as the *German*, and will hardly serve one year, and then double the quantity must be sowed; so that the procuring of *new seed* every second year out of *Germany*, will be too great a charge to answer the expectation of the planter.

A *third* is, That this *plant* is a great *improver* of land; for after a crop of *safflower*, it will hardly bear any thing.

In answer to the *first*, I dare affirm the plant to be a hardy and strong *plant*, and will endure

to be sowed much sooner, without any prejudice, so that the *flower* will come to be *ripe* before *wheat-harvest*: then plenty of hands will not be so hard to be got.

I sowed some in *February*, and some about the middle of *March*; both thrived very well, flowered, and was ripe to gather in *July*, and was gathered before the 20th of that month. That sowed in *February* was not so well coloured as the other sowed in *March*: but that I impute more to the neglect of my *gardiner*, than to any premature sowing of the *seed*; for having but a small quantity of *seed*, I ordered the sowing of it in an inclosed piece of ground, in which I had a *nursery* of *trees*, and he sowed too much in the *shade*, which I find it will in no manner brook; for although my ground was richer than that in the *vale*, yet my *plants* were not so *luxuriant*, nor the *flower* so well coloured as that which grew in the *vale*; which lying open, and exposed to the *sun* and the *air*, produced a large *flower*, much better coloured, and more upon a *stalk*, than mine did.

As to the *second*, I must beg leave to think it a great mistake in those *planters*, that aver that the gathering of the *flower* doth not at all impair the ripening of the *seed*; for having left some flowers standing purposely that nature might do her own work, I gathered the *seed*, when ripe, which proved brighter, larger, and much heavier than any of the other, whose *flower* was forced from it; therefore am confident, that if some part, when sowed, be left to stand, to have its full time to ripen, without gathering the flower, and the seed preserved to a second sowing, that that seed will be full

as

as good as what is brought from *Germany*; as in like manner we find *English clover-seed*, to be as good as any brought over from *Flanders*.

That it doth impoverish the ground, I believe, but not so as to disable it from bearing another crop. Those that have ground to let, for this, or any other *novel plantation*, will use the best arguments they can to raise the price, and this of *impoverishment* is always the chiefest: but this piece of ground that was sowed with *safflower*, did, the year following, bear a good crop of *oats*; and had it been the third year, *fallowed* and well *dressed*, would have been fit, either for *wheat*, or *safflower* again.

This I also observed, that very much of the seed, where the *flower* was gathered from the stalk, was not only *light*, but *hollow* and *black* within; wherefore I am of opinion, that if some part of a piece of ground were left standing to *ripen* of itself, the goodness of the seed would fully compensate the loss of the *flower* in its future product, and the remaining seed might be very profitable for other uses: for when the *frost* had occasioned some seeds to fall from the sides of that *stock* I mentioned before; it was observed, the *turkies* belonging to the house most greedily sought after it, and in a short time became very fat: then they tried some *geese*, who likewise fed, and grew fat much sooner than their *neighbour's*, that fed on other grains: and my sister's *Bailey* did aver, that a *colt*, by eating of this seed, recovered in a short time from great poverty to a very good condition, and had he permitted him to have eaten more of that seed, he doubted not, but the improvement of his flesh and growth would well have requited the charge of his physick.

The novelty of this *flower*, as it drew several spectators of the country to see it in the field, so it likewise begot an opinion in some of the more ignorant, that it was *saffron*; in which they were so confirmed, from the name, and the tincture of it, that they privately stole considerable quantities, especially when it *ripened*, and used it in their *puddings*, *cakes*, nay, even *bread*; but finding in it a purgative quality, which to some was very troublesome, they sold their remaining stock to an *apothecary* at the next market, who was no loser by the commodity.

If this proves of any service to you, I shall be extreme glad to have contributed in the least to so laudable a design as your *Improvement of Husbandry*; in the prosecution of which, that you may meet with encouragement and success proportionable to your merit, is the real wish of

York Buildings,
Nov. 14, 1683.

Your humble servant,

Henry Hall.

I think,

I think, to this account of Mr. *Hall*, it will not be improper to add what is said by Dr. *Robert Plott* of *Oxford*, in his excellent *Natural History of Oxfordshire*, Chap. 6. Parag. 35. pag. 155. in these following words, viz.

‘ Besides *grasses*, there have some other plants
 ‘ been cultivated here, of no mean use; such as
 ‘ *cnicus*, *five carthamus sativus*, manured *bastard-*
 ‘ *saffron*, sometimes called *safflower*, for dying
 ‘ of *scarlets*; and therefore by some called also
 ‘ the *scarlet-flower*; whereof there was once a
 ‘ considerable quantity sown at *North-Aston* by
 ‘ Colonel *Vernon*; the *seeds* being planted in
 ‘ rows, about a foot distant, for the more con-
 ‘ venient *hoeing*, and keeping it clean from
 ‘ *weeds*. In these rows it rises with a strong
 ‘ round stalk, three or four foot high, branch-
 ‘ ing *itself* to the top, where it bears a great
 ‘ open scaly head, out of which it thrusts forth
 ‘ many gold yellow threads, of a most orient
 ‘ and shining colour, which they gather every
 ‘ day as fast as they ripen, and dry them well:
 ‘ which done, it is fit for sale, and dying of
 ‘ *scarlet*.

An account how they rear Milch-Cows and Oxen in the parish of Hallfall in Lancashire; from Mrs. E. H.

WE, for our breed for the *dairy*, choose a *cow* about six years old (we mind not the colour) that hath been bull'd by a *broad-headed* large *bull*, about the same age. This *cow* should be *broad-headed* also, with small or slender horns, with a tail, whose *rump*, without the hair, reaches down below the *cambrel*, that is, the *back knee*. This *cow*, as soon as she hath *calved*, which we would have at the latter end of *March*, or beginning of *April*, we milk some from her, and then let the *calf* suck; and so we do every meal for a month, but take less and less, as the *calf* grows bigger; and always when the *calf* hath done sucking, we milk what is left behind; and this our milking is for two reasons, the *first*, that the thinnest part, which is very blue, may be taken away, and the *calf* may have the thicker, which we believe *nourishes* most, and is fullest of *cream*; for we find, that what is milk'd last, hath most *cream* of all (which perhaps is the reason *stroakings* are so much set by.) The *second* reason, *viz.* Milking after the *calf* hath suck'd, is, that she may be us'd to give her milk the freelier, and in greater quantity.

All this month we keep the *calf* in the *crib*, which is a little slanting, clean and dry, and with clean *straw*, and give it nothing but what it sucks, as aforesaid. Toward the latter end of the month, if it be good weather and warm, we, about noon, turn it with others, into a little

the dry *grass-plat*, where they have not much room, and after three or four hours take them in again.

The *cow* all the while we keep within a-nights, with *meadow-bay*, and *oat-straw*; and when the month is out,

Then we take two *calves*, as before prepared, and put them into a good dry pasture night and day, where there is some good clear water, unto an old *cow* (sometimes, if fifteen or sixteen years old, never the worse) for these will be gentle, and let the *calves* suck: if it were the *dam* of either of the *calves*, she would be over-kind to her own, and starve the other. Care must be taken, night and morning, that the *calves* may be seen to *suck*, till they are expert at it; and thus we leave them till the latter end of *August*: but always in the *edish*, or youngest short grass we can, which we always have, because we make *hay* from *Midsummer* to *Michaelmas*: then we wean them from the *cow*, and put a great many together, but still in good young pasture, as long as there is any, and sheltered warm ground. When the grass is gone we give them *hay*, and *oat-straw* mix'd; *oat-straw*, because we think it tenderer than other: and thus we order them till they are two years old, and a little more.

Then at the latter end of *July*, or beginning of *August*, we put this two years old *heifer* to a *bull* (as before described) about three years old, because a great *bull* would spoil such young ones: then a little before *Christmas*, or according as the weather is, we take her into the house a-nights, and tie her about the neck with a *sow*, that is, a piece of bent wood instead of a rope, and this is made fast to a stake by the side of

364 *A COLLECTION for Improvement*

the *booses*, or *stalls*, with another ring called the *frampat*, which is put on the stake, that the *heifer* may lift her head up or down; and before her is a *cratch* with fodder, about a foot and half from the ground, or not quite so much; one great reason of this method is, that she may be tame, and become easy to milk.

Thus we order her till she *calves*, there keeping her a month as before, and then take her into our *dairy*, and there keep her till she is twelve or fifteen year old, and made a *nurse* on, as before described. Such *nurses* will have *calves*, and be good *nurses* three or four years (although the *calves* will make them thin and lean) after that, when they have taken *bull*, we feed them with *hay* all night, and every morning and evening, we give them as many oats in the straw, with the great ends cut off, and put away, as they will eat, and about *Easter* they will be very *fat*, and good *beef*.

If before the ordinary age the *cow* misses being with *calf*, which the expert, in three months time, can tell by feeling her *flank*, then we *fat* her after the manner of old *cows*.

O X E N.

We order them just as we do the *cow-calves* abovementioned, till they are ten days, or a fortnight old, and then we cut them; that is, we get a neighbour that is expert at it, and cuts a great many, and always will have the sign in the legs. This man comes always in a morning, before the *calf* sucks, and lays the *calf* on his side, and two men hold it; the cutter kneels at the lower part of the back, and having one of the *calf's* hind legs held up, he takes the cod in
his

his hand, and at that part, that when the *calf* is standing is lowermost, he with a penknife gives a cut about an inch and half long, cutting with the edge to the cod, not putting in the point and ripping up, and cuts but just through the skin, seldom makes any gash in the stone (his use makes him perfect) and then slips out the stone, and cuts it off from the strings that hold it, and leaves them at a certain length; but how much that is, truly I cannot now tell you: when he hath taken away one stone, in like manner he doth the other; if the *calf* be well cut, he will not bleed much, but otherwise he will, and then seldom live; but if bleeding soon stays, and kept warm, he seldom dies.

When the *calf* is thus cut, then the cutter puts into each hole a piece of *fresh butter*, quite without salt, if it can be had, if not, of the best that is eaten, and called *fresh butter*; this piece of *butter* is about half an inch square, and as long as the cut. Then he lets the *calf* get up, and walks it a little up and down, that it may find its legs, and it may be seen whether it bleeds much or no, and then lets it suck the *cow*, but not so much as at other times; because it shall not be filled with over-much matter, to make it bleed; and sometimes the *calf* itself will not suck so much as at other times; when it has suck'd, it is put into the crib, and watch'd all that day, and rais'd often for fear of bleeding: if he bleeds much, we seldom do any thing but walk him about, and that often helps; and sometimes to the wound we put *cobwebs*, and if these do not quickly stop the blood, the *calf* seldom lives; but when we foresee he will die, we quickly kill him, and he is pretty good meat: if he is like to do well, he will leave bleeding
in

367 *A COLLECTION for Improvement*

in three or four hours, and at night we let him suck as much as he will, and use him as ordinarily.

Two days after we wash the wounds with *beer* and *butter* warm, and then put in square pieces of *fresh butter*, as before; the other will be melted and gone; and thus we do every morning (*viz.* wash and put butter, according to the bigness of the holes) if the wounds be very sore, or the *cod* be much swell'd, otherwise once in two days, till it be well, which usually is in a week's time; he must be kept warm, otherwise his *cod* will swell, and so will his body, and he will die.

This care being taken, we order him as we do a *cow-calf*, only keep him a week longer before we turn him out a-nights, and then keep him abroad with the *cow-calves* till he is three years old; then we put him into a sower grass, not that we think that *grass* better for him, but because it is cheaper; and it is usually in some *park* or *woody ground*, where he may have much room, and *wood* plenty to shelter him in hot weather, or *water* to stand in, to hinder his running up and down much, which will melt his *grease*, or swell him, which oftentimes kills him. They who have not conveniency themselves, are wont to score their cattle in such a pasture; that is, put them in *park* or place as before, at a certain sum, from *May* till *Holy-Rood-day*, and often give ten shillings a head. I suppose, the meaning of the word *score*, is as now, there being several mens cattle, they write them down; so formerly, before much writing was in fashion, it was used to be *scored* with chalk. Sometimes we *score* them till *Martinmas-day*, or the eleventh of *November*, and some-

of HUSBANDRY and TRADE. 366

sometimes to St. *Andrew's* day: but when we take them from *scoring* at *Holy-Rood-day*, being the 14th of *September*, we put them into the worst *grass* we have, still because cheapest, and keep them there till towards *Christmas*; then we take them into the house: *first*, because there is little food for them abroad; but principally to make them tame.

When we take them into the house we tie them with *sows* and *frampats*, as we do the *beifer* in the former account, to make them tame; and about *Candlemas*, we teach them to draw, as follows.

We yoke two of them together, and we put them in the middle, putting two old ones next the *plow*, and two old ones before, and keep a man of each side the young ones to keep them in order and to speak them fair, and deal gently with them; for we find, that if they be much beaten, they seldom prove well; and thus we attend them two or three days, but only we are careful not to let the young ones work above three or four hours in a day; after this they will be very orderly, and do as other *oxen* do, which is, work from six to eleven; and then with a bait of *hay* till one, they will hold out till five; and thus, if they hold healthy, we keep them to the yoke till they are nine or ten years old; and then about *May*, when *feeding*, or *sowing* time is done, we turn them to *grass*, to wit, the best we have, and fit them for the *drower* or *butcher*.

Some *oxen* will be fat by *Michaelmas*, and some not till *Christmas* or *Candlemas*; but those we are fain to keep at the stall with good *hay*, and a sheaf of *oats* a day; for we bind all our *oats* in *sheafs*; and when we would have them

them very fat, we keep them two years, and sell them at all prices, between eight and sixteen pound a piece.

The lean *drawing oxen* we turn out all *winter* with our *cows*, and they are sometimes subject to a disease in the feet, by the footlocks, just above their claws, and sometimes between their claws, which we call the fowles: this we cure by rubbing the fore part with *salt* and *water*, which will make it bleed, then we make a *pultise* made of *garlick* bruised, *salt* and *butter*, and bind it to the part, and change it once in two days till it be well.

When 'tis on such a place, that we cannot well lay on a *pultise*, then we anoint it with a little burnt *butter*, after it is washed with the *salt* and *water*.

Notes upon the two former accounts.

The description of a *broad head*, *slender horn*, and *long tail*, in *p. 362.* I set down as I receive it, that the curious observer may confirm it as a truth, or detect the error; but the country folk value their cattle by these marks much.

From what is said in *p. 362.* as if the thin blew *milk* did not nourish so well as the thicker, that comes latest, which not only this my *informant*, but several others affirm: If, I say, this affirmation be true matter of Fact, I think it will appear that either, that this is not so apt to turn *acid*, which is thought to be causes of *fluxes*, that waste and make lean; or else, that it is *butyrous*, *fat*, and *oyley* things, that very much conduces to nourishment.

The sign in the *legs* I give no heed to, but the *cutter* will hardly do it at any other time; but

but for ought I can learn, he cuts abundance, and is expert, therefore hath good Success; whereas the other that mind not the sign, cut but few, and are not so well vers'd in the matter, therefore the event is not so successful.

This melting of the *grease* I must confess, I do not understand; I suppose 'tis only meant *sweating* or *swelting*, as 'tis called; and whether *sweat* hath any thing of *grease* in it is some question, for none appears to the eye; and in a *handkerchief* by the fire, 'twill dry up; likewise it doth so in *horses*; and 'tis generally thought to be the same with the serum of the *blood*, and that is heavier than common *water*, as the honourable *Robert Boyle* Esq; in his excellent *natural history* of *human blood*, hath by notable histories made to appear; for in p. 70, 71, he saith thus, ' Having *hydrostatically* examined ' the *serum* of human blood, we found it heavier than common *water*; for a piece of red ' *sealing wax* being suspended in a good balance, ' by a *horse-hair*, was found in the air to weigh ' one dram and fifty six grains, and the *water* ' thirty five grains, but did in the *serum* weigh ' but thirty three grains.

' This tryal was confirm'd by a more exact ' one made with an instrument that I purpose- ' ly caus'd to made for weighing Liquors nicely; in which when common *water* weigh'd ' 253 grains, an equal bulk of *serum* weigh'd ' 302: and because I supposed that all *serums* ' of human blood would not be of equal specific gravity, thought fit to try the blood of ' another person in the same instrument, and ' found it to weigh two grains less, that is, 300 ' grains in all.

them very fat, we keep them two years, and sell them at all prices, between eight and sixteen pound a piece.

The lean *drawing-oxen* we turn out all *winter* with our *cows*, and they are sometimes subject to a disease in the feet, by the footlocks, just above their claws, and sometimes between their claws, which we call the fowles: this we cure by rubbing the fore part with *salt* and *water*, which will make it bleed, then we make a *pultise* made of *garlick* bruised, *salt* and *butter*, and bind it to the part, and change it once in two days till it be well.

When 'tis on such a place, that we cannot well lay on a *pultise*, then we anoint it with a little burnt *butter*, after it is washed with the *salt* and *water*.

Notes upon the two former accounts.

The description of a *broad head*, *slender horn*, and *long tail*, in *p.* 362. I set down as I receive it, that the curious observer may confirm it as a truth, or detect the error; but the country folk value their cattle by these marks much.

From what is said in *p.* 362. as if the thin blew *milk* did not nourish so well as the thicker, that comes latest, which not only this my *informant*, but several others affirm: If, I say, this affirmation be true matter of Fact, I think it will appear that either, that this is not so apt to turn *acid*, which is thought to be causes of *fluxes*, that waste and make lean; or else, that it is *butyrous*, *fat*, and *oyley* things, that very much conduces to nourishment.

The sign in the *legs* I give no heed to, but the *cutter* will hardly do it at any other time; but

but for ought I can learn, he cuts abundance, and is expert, therefore hath good Success; whereas the other that mind not the sign, cut but few, and are not so well vers'd in the matter, therefore the event is not so successful.

This melting of the *grease* I must confess, I do not understand; I suppose 'tis only meant *sweating* or *swelting*, as 'tis called; and whether *sweat* hath any thing of *grease* in it is some question, for none appears to the eye; and in a *handkerchief* by the fire, 'twill dry up; likewise it doth so in *horses*; and 'tis generally thought to be the same with the serum of the *blood*, and that is heavier than common *water*, as the honourable *Robert Boyle* Esq; in his excellent *natural history* of *human blood*, hath by notable histories made to appear; for in p. 70, 71, he saith thus, ' Having *hydrostatically* examined ' the *serum* of human blood, we found it heavier than common *water*; for a piece of red ' *sealing wax* being suspended in a good balance, ' by a *horse-hair*, was found in the air to weigh ' one dram and fifty six grains, and the *water* ' thirty five grains, but did in the *serum* weigh ' but thirty three grains.

' This tryal was confirm'd by a more exact ' one made with an instrument that I purpose- ' ly caus'd to made for weighing Liquors nicely; in which when common *water* weigh'd ' 253 grains, an equal bulk of *serum* weigh'd ' 302: and because I supposed that all *serums* ' of human blood would not be of equal specific gravity, thought fit to try the blood of ' another person in the same instrument, and ' found it to weigh two grains less, that is, 300 ' grains in all.

There are other matters in this chapter worthy note to my purpose; but to them I'll refer the reader.

Now if this *sweat* be *serum*, and *serum* be heavier than *water*, it much differs from the other sorts of *fat* and *grease*, that we ordinarily meet with.

The way they fat calves at Tring in Hertfordshire.

WHen we would make an excellent fat *calf*, we choose a large *cow-calf*, and as soon as 'tis calved, and clean, if it hath not strength enough to stand up and suck, we help it; and if it be a hard *milch't cow*, we milk out some *milk* before the *calf* sucks; and while the *calf* sucks on one side we always milk on the other, and so often the first day, as the *calf* sucks, and sometimes oftner, if the udder be too apt to core, or the *cow* does not well give down her *milk*; and also, what the *calf* can't suck, we draw out even to the last drop.

Sometimes the *cow*, with milking and sucking, will not give down her *milk*, and her udder will core and swell, and if not well look't to, be spoiled; sometimes she will give *blood* instead of *milk*, for three months; but this core we cure with anointing it with *bacon-grease*; sometimes with oyl of the herb *adders-tongue*; other times with the juice of *elder* and *cream* boyled together; but that which I have found best, hath been, rubbing it cold with the *matter* (*viz.* *curd* and *salt*) that come out of the old rennet bag; this we do every time we milk; and this last *medicine* I never knew fail, in two or three times using.

The

of HUSBANDRY and TRADE. 371

The second day, and so forward, we milk twice a day, all we can get out, and then let the *calf* suck, and she, for a while, will thus get enough; but as she grows bigger, we abate in our milking.

We keep the *calf* in a penn, such an one as describ'd about rearing of *milch-cows*; only this we tye, and give her just room to lye down, and hang by her a *chalk-stone* to lick on, that it may be white, and a wisp of fine short *hay*, which the *calf* will now and then eat a little of.

When the *calf* is a week old we let it bleed, by cutting off an inch off the tail, and let it bleed as long as it will, which never does hurt; and every week or ten days we cut another piece of the tail off, and always two or three days before it be kill'd; for we find that this bleeding both fattens and whitens the *calf*: till this way of bleeding was brought in fashion into our town by one *John Gere*, a *yeoman*, we never could have so good *calves* as we have had since.

All the while we keep it very dry, and with clean *wheat-straw*, some use *bean-straw*, thinking it better, because it will lye hollow.

About nine weeks old we sell our *calves*, sometimes for 3 *l.* 10 *s.* a-piece; seldom or never for less than 2 *l.* although we are thirty mile from *London*. If the *cow* hath not *milk* enough, we let the *calf* suck two *cows*.

This is the method we use, and I like best; but I have known at *Layton* in *Essex*, they cob their *calves* morning and evening with cobs made of *boyl'd rice*, and let the *calves* suck only what they can get after the *cows* are milk'd, and by this means, save so much *milk*; or buy their

neighbours *calves*, and fat with a few *cows*, so many more *calves*: some with their *rice* prepar'd as afore, mix *malt*, *flower*, a little *cream*, and some powder of *chalk*: And I have heard of some that mix a little *brandy* with it, thinking it makes the *calves* sleep, and they fatten the faster.

Sometimes the *calves* are subject to a scowring, which we always cure by giving them two or three spoonfuls of *rennet*, or rubbing their mouths with a handful of *salt*.

The way they fat lambs for the London market at Hadley, near Barnet in Harfordshire.

WE take the *lambs* as soon as they are wean'd, and put them in a close warm penn, and in a trough by them we put white *pease* and *bran* mixt together, and hang by it a handful of good fine *hay*, tyed in a cord, as also a *chalk-stone* for them to lick on. So let the *ewes* go in good *grass*, but bring them to the *lambs* four times a day, viz. at eight, twelve, four, and eight of the clock, that they may suck as much as they will, and let the youngest *lamb* suck first of every *ewe*, which the *ewes* will permit, after the *lambs* have been held to them, and they have been used to it a while; then we let the next in course suck, and be sure the eldest at last: for we find that the last *milk* nourishes most.

Thus, if we can have early *lambs*, we can, after they are three weeks, or a month old, sell them for fifteen or sixteen shillings a-piece.

When we sell any *lambs* off, we still let the rest suck all the *ewes*, as long as we have a *lamb* left,

left. And some with us use much the same method in fattening of *calves*.

Notes on the account of fattening *calves* and *lambs*.

Whether the matter from the *rennet-bag*, mentioned in p. 370 (or *rennet* it self) that is so good to cure a *cow's* udder, that is cored, may not also be a good medicine for *women's* breasts that are cored, I leave to the consideration of the expert in the faculty of *chirurgery*.

The *chalk-stone* to lick on, mentioned in p. 371. I am afraid the country people think, because it is white, it makes the *calf* so; but I believe it is a great mistake: but I know the chalk is a great *alkali*, that is a destroyer of acid or sharp matter, as may be seen by scraping a little into *vinegar*, juice of *Lemons*, or any other sharp matter, for it will make a great effervescency or working, and after a while, take away the sharpness of the acid liquor. Now if it be true, that it is sharp or acid matter that hinders thriving, and often causes laskes or fluxes, then 'tis very reasonable, that *chalk* may hinder leanness, and much help the colour of the *veal*. And whether this may not be a proper thing to give in *milk* to such as are in consumptions, and other pining leanness, I submit to the judgment of the learned.

Instead of cutting the tails of the *calves*, some let them bleed under the tongue.

It is a common saying, that often bleeding will make people fat: although there are instances more than a great many, of those that have not fattened for it. I must confess, it seems to me reasonable enough, that where any one labours

with a disease, that bleeding will cure; bleeding may properly enough be thought to be the cause of fatning; but why it should cause it in a body of perfect health, I cannot at present see the reason; but have hinted it, in hopes the learned may consider it, in order to detecting an error, or encouraging farther improvements. I have given you what the country folk say is matter of fact; if they mistake this, for some other cause you must pardon me.

The bigness and great consumption of *London* doth not only encourage the breeders of provisions and higglers thirty miles off, but even to fourscore miles: wherefore I think it will necessarily follow, that if *London* by its bigness, or any other way, should consume as much again, the country within these fourscore miles would have a greater employment; or else, those that are further off will get some with them.

Directions for the making of Colonies for Bees, and by a new invented model of Hive, to improve them, whereby without killing, may be enjoyed the fruit of their labour.

SIR,

HAVING this following account by me, I thought it might prove no small Advantage to our country if it were brought in use; which it is probable may be, if you will insert it into your *Collection of Letters for improvement of Husbandry and Trade*. It is as followeth, viz.

Take

TAKE boards in thickness full half an inch, plained on the one side, of which make a hive, in form like unto a four square box, observing to turn the plained side of the boards innermost, and to have it of such wood as the smell is not offensive to *bees*: the length of which hive is to be twenty inches and an half within, as well at top as at bottom, and the breadth betwixt front and rear, to be eighteen inches within at top, but at bottom only fifteen inches; the ends to be nailed through the sides, and the top to be open, but on the bottom a board to be nailed of twenty two inches square, that so it may cover on all sides the top of another hive, or colony, that may be placed under it: then prepare ten straight sticks, plained smooth, of twenty one inches long each, in thickness an inch, and in breadth one inch and an half; which sticks must be laid cross the top, from front to rear, at the distance of half an inch from one another, a vacancy of half an inch to be left at each end, betwixt the two outermost sticks and the ends of the box; and at these distances they are to be let down half an inch into the two upper edges of the box, front and rear, and the sticks themselves are to be taken off half an inch more of their thickness at each end, on the under side one inch and an half in length, whereby being let down square and even, the topside of the sticks will come just level with the tops of the sides and ends of the box or hive, so as that it may be close cover'd with a loose square board or plank well fitted on, as close as may be, to advance an inch over the top of the box on each side, that if occasion be, the joynts under the edge of the plank

may be stopt with clay in the winter time, and a brick, or some other weighty thing be laid thereon to keep it fast down: or by setting another box or hive upon it, the bottom whereof, upon occasion, hereafter mentioned, to serve as a cover; into which cross sticks are to be framed, at each end thereof, another flat stick or lath of an inch and an half broad, and of a quarter of an inch thick, which are to run down flat by the two sides front and rear, on the inside of the box within an inch of the bottom; and within three inches of the lower end of the laths is to be fixed in each frame a cross stick of about three quarters of an inch broad, to keep the side laths out close to the sides; in each of which frames it is designed that the *bees* should fix a comb, beginning at the top of the box on the under side of the cross sticks; which frame, when wrought full to the bottom, will each of them contain an entire comb of the whole breadth and depth of the hive or colony; and by this means you may at your conveniency (first taking off the top board or plank) draw out the whole comb, it not being wrought to the sides, but in the frame, and the lower end being narrower than the upper, it will come up with ease; so that in the spring, when you would increase the number of your hives, and make two of one, you may, and thereby prevent their swarming which in *Greece* is in this manner practised.

Having in readiness always a number of new hives sufficient to supply their expected increase, each fitted with a fit number of frames, as is above directed, which hives and frames are all of the very same dimensions, so that when any of the frames are taken out of one hive, they
may

may exactly fit another; then, in the month of *March* or *April*, as they see the hives well stock'd with full number of *bees* (which by their working may easily be perceived) they begin first with those that are the fullest with *bees*, and take off the board that covers the hive; which if they find to stick, by reason of any combs wrought or fixed to it through the intervals of the frames, they quickly separate it therefrom by giving it a twist or half turn; then they draw out the frames one by one, with the combs, and all the *bees* that are upon them, beginning first at the ends, and placing them in the new hive (which is always ready provided, and stands by without any frames in it) where each frame is put in, in the very same order that they stood in the old hive, and so proceed 'till half the frames be remov'd, which vacancies in the old hive are supplied with new frames, and the vacancies in the new hives also with empty frames, for the *bees* to go to work upon; then they cover both the hives with their own boards, and set the new hive in the old one's place, and the old one in a new place; and all this is done by them in the middle of the day, when the greatest part of the *bees* are abroad, who at their coming home without much difficulty, divide themselves equally; this device hinders their swarming, and prevents their flying away and being lost.

It might not be amiss to try what the effect would be, if this work were performed in the night, according to the *English* way, noting which way gives least disturbance to the *bees*.

Also it being done the other time, to observe whether at the return of the *bees* that are abroad

broad, most of them go to the new hive, or to the old one; and accordingly, when the *combs* are a shifting, to take more or less of them out, according as you shall find this generally to be; for if they do resort most to the new hive that stands in the old one's place, you need then to shift no more than four of the ten frames into the new hive, letting the other six remain in the old hive that stands in the new place, where it is prevented from receiving the supplies by the resort thereto of the *bees* that were abroad at the time of its shifting, they not knowing where to find it at their return.

When you draw out the frames with the *combs* and *bees* upon them, and find them to come out pretty easie, it were worth the tryal, whether it would not be less disturbance to the *bees* (if it can be done) to remove two or three frames at a time, which may the better be done by the claping of a short piece of lath, of about a handful long, under the end of those frames that you intend to take out together, by which you may also keep the frames at an equal distance when you let them down into the new hive.

And this must be observed when you put any empty frames into hives, to place the bottoms of these frames at an equal distance as well as the tops; otherwise the *combs* may be fixed beside the frames in the intervals, fast to the sides of the hives, and then 'twill not be easie to draw out the *combs* without breaking of them. But if this way of drawing out two of the full frames together as above, doth prove feasible, then the best way will be, to make a good part of the new frame two joyned together

ther at bottom and top, especially those that are to be placed next the ends of the hives: which will be a good means to keep so many of them at their true distance at bottom.

Now the best method to enjoy the fruits of these creatures labours, and without destroying of them, to take them from their *honey* and *wax*, and without using that noisome way of smothering with *brimstone*, is done in this manner.

Your hive having a mouth or door cut in the middle of the bottom of the front side, for the *bees* to pass in and out at, of about an inch high, and three inches wide; on each side of which mouth is fixed a grove of three inches high on the outside, wherein doth run up and down pretty stiffly a little trap-door, wherewith to shut the mouth of the hive when there is occasion, under which mouth there is also cut another hole in the bottom board, of about four inches and an half wide, and six inches deep from the inner side of the hive; in the side, edges, and further end of which hole must be cut a groove to let in a false door of the same substance as the bottom board is of, so that when 'tis shut, it may be plain and even on both sides with the rest of the bottom board: the use to be made of it is this:

About the month of *August*, or sooner, if you find the hives well filled with *wax* and *honey*, prepare so many new hives as you have old stocks, all fitted with frames and bottom boards, as is before directed; which old stocks being placed in a row upon broad planks that are set upon posts drove into the ground, about a foot high, they, the old stocks or hives, standing at such a distance

distance from one another, as that there may be room enough betwixt hive and hive, to place in those intervals the new prepared hives, without any top board upon them; then in the evening, when the *bees* are all at home, you are to shut close down the trap-door over the mouth of the old hive, that so the *bees* may not offend you; then you are to take up the old hive, closed as it is, and set plumb, directly even on all sides, upon the top of the new hive that stands by, without any cover, the bottom-board of the hive that you put a-top supplying the place thereof; then draw out the false door that is in the said bottom (now middle) board, as far as the inside of the front of the upper hive, and no farther, still keeping the trap-door that covers the mouth of the upper hive close shut down (but that of the under hive to be open) so that the *bees* having no other passage out but through the false door in the bottom-board, they will betake themselves to the new habitation below, and begin to frame new *combs* therein, not delighting to lie among the *honey* above, if they have place otherwise.

And when you find that they have well taken to the new hive, which may haply be in a fortnight's time (but would best be discovered thro' a small window of a glass fixed in the front of the hive) then thrust in the false door that runs in the *groove* in the said bottom-board of the upper hive, which is now betwixt the two hives, by which means you shut out the bees that are below, from the *honey* and *wax* above; in which condition let them stand two or three days longer; in the mean while, if any *bees* be left behind in the upper hive next morning, you may open the door and let them out, and at noon-day, when

of HUSBANDRY and TRADE. 381

they are gone, shut them out, and a few days after, in the evening, you may take away the upper hive, and in its room cover the lower hive with its top-board, so to remain all *winter*; before which it may be expected the *bees* will in their new habitation have gathered a sufficient quantity of *honey* for their maintenance till next *spring*. And thus have you the fruits of their former *summer's* labour at your mercy.

When you have taken the *combs* clean from their frames, you must also cleanse the hive that you took them from, either by hot water, or scraping them, being carefully laid up, they will serve again next year.

When your *stocks* or *hives* come to be numerous, they may be placed on broad planks, set along by a *pale* or *brick wall*, but at such a distance from it, that a man may come behind the row of hives upon occasion, to assist in managing them; and from the top of the *pale* or *wall* may be built a *shed* or *pent-house*, of a sufficient breadth to defend the row of hives from the weather.

I presume, that if this *pent-house* should be too chargeable or cold, if wood, which I understand was the fault of *Geddy's* colonies; twenty other cheap ways may be invented to keep them warm with *straw*, or that with *wool* underneath, or having the hives *lackered*, or setting them in a *green-house*, that in extreme cold is kept warm by art. But these are only the conjectures of, S I R,

Your humble servant,

J. A.

An

An offer to make it appear, that this kingdom will thrive more, and the manufacturers live better, and sell their manufactures cheaper when provisions are dear, than when cheap: with some proposals for the keeping up of dearneſs, induſtry and plenty.

PROVISIONS, by reaſon of our two laſt hard winters and our dry ſummer, being riſen to great price which cauſes much complaint among the generality of people, I do think it a very reaſonable thing for me to endeavour to ſtifle the ſame, by ſhewing, that dearneſs is ſo far from being a prejudice to the nation, that it is rather to be wiſhed for. And this I am the more obliged to, by reaſon that in *Numb. 10. pag. 96.* of the firſt volume of theſe Collections, which was publiſhed November the 9th, 1682. I partly made a promiſe ſo to do.

In order to the well underſtanding of this, I will conſider the round or wheel ſome things are apt to take, and that quickly, if not retarded; for inſtance, plenty cauſes lazineſs, that ſcarcity, that dearneſs, that induſtry, and that plenty.

Now this wheel may be made to move ſwift or ſlowly, according to the managements of the ſuperior ranks of people.

For Example.

If there be of food a plenty, lazineſs follows it, and this lazineſs may be prolonged, if ſo be that the people be compelled to an extraordinary ſavingneſs, or by faſhion or example be beaten off, or hindered from thoſe things that are wont to make great conſumptions: for inſtance, ſhould they

they be compelled to eat only *brown bread*, drink *small beer* or *water*, keep near their own homes, so that *coach-horses* and *saddle-horses*, that devour corn, should grow almost useless; should *finery*, and all superfluous things be beaten out of countenance; for then the generality of people will not work, because they can live without it. This is so plain, that I think it is visible to every body: but however, that none may have an excuse, I pray consider the gentry; they spend their time in recreations, because they have enough, they say to their souls, *Soul, take thy rest, for thou hast much treasure laid up for many years, eat, drink, and be merry*. Whereas, he that by misfortune, or other ways through *scarcity* comes to be pinch'd, immediately strives for some publick office, or other employment; it is few that love to starve.

The rich *merchant* or *tradesman* commonly knocks off, and reckons it his glory to be a gentleman: and the generality of poor *manufacturers* believe they shall never be worth ten pounds, therefore they seldom strive to get ten shillings beforehand; and if so be they can provide for themselves sufficient to maintain *their* manner of living by working only three days in the week, they will never work four days; they say, if by sickness they should come to want, the parish is bound to find them: and for the *beggar*, he cries, it is hard, if I mind my business (especially in *London*) if I do not get eighteen pence a day by begging (besides having the liberty to see any friend or shew, and being but very little at any man's controul) it is a hard case; why then should I work hard all day, be tied to one place, and at the checks and chiding, perhaps, of a humourfome task-master? I see no reason, I will
beg

beg on still, unless the severe execution of a hard law, or the decay of my master's abilities or charity shall hinder me. And thus they go on.

This I question not but will be granted by all, unless about the manufacturers. But there, that I may not be thought to dream, it will appear, if it be ask'd of the generality of those men that employ *journey-men* or *day-servants*, and if it be put home to them, whether they do not think that their servants, one with another, could in cheap times do as much work in three days as ordinarily they do in a week, they would few of them deny it, I am sure several have confess'd it to me, particularly when the *frame-work knitters*, or makers of *silk-stockings* had a great price for their work, they have been observed seldom to work on *Mondays* and *Tuesdays*, but to spend most of that time at the *ale-house* and *nine-pins*; nay, almost the whole company entered into a confederacy not to work for a month together, that thereby they might keep up their prices: this was, as I take it, about four or five years ago, and there is hardly any of their company that were then in being, will deny it. The *weavers*, it is common with them to be drunk on *Monday*, to have their heads ach on *Tuesday*, and their tools out of order on *Wednesday*. As for the *shoemakers*, they will rather be hanged than not remember St. *Crispin* on *Monday*, and it commonly holds as long as they have a peny of money, or a penyworth of credit; and very often, especially the good and quick workmen, begin their week's work on *Friday* morning, or perhaps evening, but then work on till *Sunday* morning; and when their credit is run so far that it will go no farther, they pack up

up *St. Hugh's bones*, and march to some other town in *England*, there to set up afresh. The stile the *painters* give themselves is, *honest drunken curs*; they often work at heaving of *glass*, lifting of *pewter*, emptying of *cellars*, and such like. And thus, if I would, I could give you such true accounts of most other professions that live by labour; but this, and more than this, may any body know, that will but give themselves a little diversion to look into the publick houses of most of the out-parts of the city, and the country towns will be found in proportion but little better.

I think, by a consideration of what I have said, it will sufficiently be granted, *That plenty causeth laziness*.

And that *laziness* should cause a *scarcity*, I think will need but little proof, for we live not in the isle of *Lubberland*, where *fowls* fly into our mouths ready roasted; for we can have no *corn*, nor a great many other necessaries, if some body won't take pains for them.

Thus we may see how the great blessing of *plenty* may be abused, and how the abuses may be prolonged: but nature will have its course.

It is very seldom but that *virtues* and *vices* bring their rewards and punishments with them; a *vicious life* is like *Tom Thornton's* dog, if he leads an ill life, he will have an ill end; so this sin of *laziness*, it will be attended with *scarcity* and *deariness*, unless men will all at once be resolved to die.

But although this sin of *laziness* be punished with *scarcity* and *dearth*, yet evil sometimes may be the forerunner of great good, as I shall endeavour to shew in the following argument.

beg on still, unless the severe execution of a hard law, or the decay of my master's abilities or charity shall hinder me. And thus they go on.

This I question not but will be granted by all, unless about the manufacturers. But there, that I may not be thought to dream, it will appear, if it be ask'd of the generality of those men that employ *journey-men* or *day-servants*, and if it be put home to them, whether they do not think that their servants, one with another, could in cheap times do as much work in three days as ordinarily they do in a week, they would few of them deny it, I am sure several have confess'd it to me, particularly when the *frame-work knitters*, or makers of *silk-stockings* had a great price for their work, they have been observed seldom to work on *Mondays* and *Tuesdays*, but to spend most of that time at the *ale-house* and *nine-pins*; nay, almost the whole company entered into a confederacy not to work for a month together, that thereby they might keep up their prices: this was, as I take it, about four or five years ago, and there is hardly any of their company that were then in being, will deny it. The *weavers*, it is common with them to be drunk on *Monday*, to have their heads ach on *Tuesday*, and their tools out of order on *Wednesday*. As for the *shoemakers*, they will rather be hanged than not remember St. *Crispin* on *Monday*, and it commonly holds as long as they have a penny of money, or a pennyworth of credit; and very often, especially the good and quick workmen, begin their week's work on *Friday* morning, or perhaps evening, but then work on till *Sunday* morning; and when their credit is run so far that it will go no farther, they pack up

up *St. Hugh's bones*, and march to some other town in *England*, there to set up afresh. The stile the *painters* give themselves is, *honest drunken curs*; they often work at heaving of *glass*, lifting of *pewter*, emptying of *cellars*, and such like. And thus, if I would, I could give you such true accounts of most other professions that live by labour; but this, and more than this, may any body know, that will but give themselves a little diversion to look into the publick houses of most of the out-parts of the city, and the country towns will be found in proportion but little better.

I think, by a consideration of what I have said, it will sufficiently be granted, *That plenty causeth laziness*.

And that *laziness* should cause a *scarcity*, I think will need but little proof, for we live not in the isle of *Lubberland*, where *fowls* fly into our mouths ready roasted; for we can have no *corn*, nor a great many other necessaries, if some body won't take pains for them.

Thus we may see how the great blessing of *plenty* may be abused, and how the abuses may be prolonged: but nature will have its course.

It is very seldom but that *virtues* and *vices* bring their rewards and punishments with them; a *vicious life* is like *Tom Thornton's* dog, if he leads an ill life, he will have an ill end; so this sin of *laziness*, it will be attended with *scarcity* and *deariness*, unless men will all at once be resolved to die.

But although this sin of *laziness* be punished with *scarcity* and *dearib*, yet evil sometimes may be the forerunner of great good, as I shall endeavour to shew in the following argument.

Although I cannot allow that *scarcity* shall always make *deariness*, because sometimes the *scarcity* shall make things grow out of use, and other things be made in lieu of them, that may be more useful; yet I dare affirm, that *scarcity* of necessary commodities, such as provisions are, and other things that are made necessary by their being much in vogue, will make such commodities *dear*; and this we see daily by the *rise* and *fall* of commodities. For instance, of *meat* at this time, that is *scarce* by means of our late hard *winters* and dry *summer*, of *mourning* at the late King's death, of places to see the shew at the *coronation* of our King and Queen, but more especially at the siege of great towns, as that of *Samaria*, in the sixth chapter of the second of *Kings*, verse 24. when an *ass's head* was sold for fourscore pieces of silver, and the fourth part of a *kab* of *doves dung* for five pieces of *silver*; which may be illustrated by the contrary in the next chapter, when as the next day to the *scarcity*, a *plenty* made a measure of *fine flower* be sold for a *shekel*, and two measures of *barley* for a *shekel*. More instances might be brought to prove this; but I think they need not: wherefore I will proceed to the next spoke, and consider how *deariness* causes *industry*.

I think I need not question, but that it will be granted me, that without necessities none can live: that the *poor* that have not wherewithal to buy necessities, must take pains to get them in ordinary courses: that a man may have a thousand pounds a year, and yet have not enough to buy those things that he hath made necessary; which, if granted, I think it must follow, that all these sorts of people must take pains, or bring themselves to great inconveniences. To
make

make this appear, I need no better argument than the old *English* proverb, *Need makes the old wife trot*. For example; the *silk-throwsters* can seldom get their *silk* wound and brought home so diligently and quick as in dear times. The weavers are in the like case; and journey-men shoemakers at this time will be their masters most humble servants, and do almost what they will ask them, for hopes of a little work.

I am not insensible of the complaint that there is no trade, and that is the reason that the people can have no work, and therefore they are fain to catch it from one another, as industriously as they can. But I appeal to any understanding considerate man, whether there can be ground for any such complaint at *London*, when it is considered, the loss of our late King put almost every body into *mourning*, which made them buy new *vestments* from top to bottom but lately; and at the *coronation*, a great many supplied themselves again with garments more rich than ever, and they are now arrived to second *mourning*; our town hath been filled with *addressers*; we have had great store of *ambassadors*, *strangers*, and *country people* to see the *coronation*, and now are arrived our *term* and *parliament*; I cannot hear that the customs are lessened; and is it possible, these things considered, to have the trade abated? Perhaps the *mourning* may lessen the use of *silk*; and it is as likely, that in a little while the *silk* will prevail above the *mourning*. What then, must not the dealers in *wool* live as well as the dealers in *silk*? Or, is the trade lessened, because it is altered from one to another? It is no *argument*, therefore for shame let it be used no more.

Now if my reasonings are good, and I can shew that *industry* makes a *plenty*, I have made the *wheel* go round, and shall obviate the questions of some, that it is probable might otherwise be dissatisfied; and this, one would think, should need no argument. But consider, that men can hardly be called *industrious*, if so be they produce no more than they did when in great *plenty*; but without doubt they do procure more than they were wont, for more labour will procure more commodity, and the labourers that were able to live but from hand to mouth, must of necessity find out some more employment, or starve; but of that we hear little or nothing, they do work cheaper than ordinary. For instance, *shoemakers* make men's shoes now for ten pence the pair, when as they were wont to have fourteen pence; and it is a common thing, when manufacture is cheap, for the rich *tradesman* to buy and throw by, saying, *hang it, it is hard if it won't pay interest, it will fetch money one time or other*. I know a *weaver* at this time hath five thousand pieces of ribbon by him, and still employs his work-folk, although it is with a pretence to keep them from starving; and I have no cause to think but others do so as well as he.

The advantages accruing by this dearnefs, may be seen by considering what follows.

If by the *dearnefs* aforesaid the *manufacturers* cannot keep up their habitual port by working three days in a week, they will work four days, or find out engines or new contrivances equivalent, by which means a fourth part of *manufacture* is procured more; which being more than we were wont to furnish our *markets* withal, will not presently vend; therefore the pressing
2
hunger

hunger or want of the poor *manufacturer* forces him to offer his work to sale, which makes it slighted; and it obtains but a small price, which enables the purchaser to sell it cheaper abroad, and so comes nigher, or out-does the *foreigner* that sells the same thing at the same *market*, if he be not exactly in our circumstances; it *freights* a fourth part of shipping also.

Nay, the *manufauretr*, if he sells cheaper than usual, and *provision* be a fourth part dearer, he must, by so much as he sells cheaper, work more than a fourth part to maintain his old port: and this still encourages *cheapness*, and the advantages as abovesaid.

It is my belief, that these spokes of *dearness*, *industry* and *plenty*, may a great while be kept uppermost, by the good management of those in power, particularly by our Sovereign Lord the King, if he will be pleased to encourage such ways, as by *fashion*, or otherwise, will encourage great *consumptions*, if he will be pleas'd to renew the *act* call'd, *The Bounty Act*; whereby was given from the royal treasure five shillings for every *quarter* of *wheat* that was *exported*, when it was under the rate of five shillings the *busshel*; and for other *corn* a certain price.

But I foresee an *objection* that will be made to this, *viz.* *Why should the King give so much out of his pocket without a compensation?*

To which I answer: that I am very sensible; that it cost the late King a great deal of money; I have seen the account of sixty one thousand and odd pounds in one year, which must needs pay for, if it were all *wheat*, twelve score and four thousand *quarters*, which at thirty shillings a quarter, did amount to three hundred sixty six

thousand pounds; which if this *Bounty Act* was the cause of its being carried out, was all by it gained to the nation, because in a little time we should be so far from having less, that we should have a greater stock of *corn*: for I observe, that whatsoever commodity there is much sold of, the sellers thereof endeavour to stock themselves better with than ever.

This we may see by the *East-India company's* selling of *callicoes* and *silks*; the more they sell, the more they bring to sell; and the *timber-merchants* on the *bank-side*, they never were so well stored with *timber* as since the burning of *London*, and the great consumption caus'd by the rebuilding thereof.

If this be granted (and I am sure it cannot be denied, then I humbly conceive that (let the return of *corn* bring the King in by *custom* what it will) it will be no hard matter for the three *estates* in *parliament* humbly to beseech the King, that it may be enacted, that a month's tax of seventy thousand pounds, or an equivalent rais'd some better way, may annually be set apart for this; which if it be, it is probable the advantages will be greater than at present can be imagined: it may make us the *granary* of *Europe*: it will increase our *navigation*, and bring a great many of our idle people into employment, our lands will be improved, besides a hundred other advantages.

If it be good to have *provisions* dear, then it will be good, in order to our procuring more corn, and our selling it for a good price, to make the five shillings a quarter to be six shillings, and other corn proportionable; I mean, to let the *exporter* have the five shillings the *quarter*, always when the price is under six shillings

lings the *bushe*, and so proportionable of the rest.

Another way to keep up this *dear*ness, *industry* and *plenty*, will be, to have the *excise* of *beer*, *ale*, and other liquors raised, the *strong-beer* and *ale* to at least the old three shillings and three pence, and the *small* to nine pence the *barrel*; and this should be laid, not only as it is now, upon publick *brewers*, but also on all others that brew their own drink.

I know this will not be thought well on by a great many, but it will be of good use for all that, for it will increase trade, *brewers* will be in every tolerable town, and on them depend *wheel-wrights*, *coopers*, good *teams* of *horses*, *cum multis aliis*. Meaner sort of people, for the saving of a shilling or two by *brewing*, will not be diverted from better employments, whereby they might get twice as much; this part of their *provision* will be dearer to them, and will oblige them to more *industry*, whereby they will procure more *manufacture* to sell cheaper, as I have shewn above. The *gentleman* hath no reason to complain, because, if he doth pay more than usual, he will pay but like his neighbours, and why he should be exempted from that, I see no reason. But somewhat more; it is impossible the nation should thrive, and not the land (which commonly belongs to the gentleman) thrive with it; the *gentleman* may, as I have shewn already, buy his *manufactures* at a cheaper rate; and this will be a good means to save him *land taxes*, and to pay for the exportation of *corn*.

A third way to keep up this *dear*ness will be, to lay an excise of a groat a pound upon *wool*, both on what grows at home, and what is imported, and to pay back at the *Custom-house* so

much *per pound* for what shall be exported, as shall be thought needful.

I am sensible, that this at first sight will be thought a strange proposal, well knowing that the *gentleman* would have *wool* dear, but would have it come into his own pocket, not the King's; and will mistrust, lest this duty should make his *wool* sell from him so much cheaper, because *England* must sell as cheap as its neighbours; and the *merchant* and *tradesman* think it the kingdom's interest to sell *wool* as cheap as we can, that we may thereby out-sell our neighbours, and that the *wool* is the least considerable in a piece of cloth. I must, to support my proposal, strive with good reasons to satisfy both; which I will do as follows, considering two things:

First, What *hurt* it will not do.

Secondly, What *good* it will do.

First, It will not hurt the *Spaniard*, *Irish*, *French*, or *German* in the price of their *wool*, because they may sell their *wools* at home, as they use to do; this *excise* must be paid only among our selves, and it is equal with our own, except it should be said, that it should be laid so much on a shilling that any sort sells for; neither will it hurt our selves, because the *English wool* is still in proportion to others, neither will it hinder the sale of our *woollen manufacture*, because we may sell as cheap as we were wont to do.

It is commonly said, that the *wool* of *England* and *Ireland* is of such variety, that with it we may make most sorts of *manufacture* wanted, although foreign *wool* be a good help to us; it is
also

also said, that it is a very sorry *manufecture* that *foreigners* can make of their *wool*, without a mixture of some of ours. If this be true, and I am told by understanding men that trade in *woollen manufecture*, that it is true, then it will follow, that if we can keep to our selves the *English* and *Irish wool*, we shall have a great advantage of other folk, and I think the way I have proposed will do the feat.

In the second place, the good it will do, will be this: it will cause a diligent search for *wool*, that it may pay the King's duty; and it will in likelihood make it not worth while for *foreigners* to buy our *wool* at so much difference as will be between us and them, except it be for such *manufactures*, the like whereof we make not, and then it will not do us much damage; it will make their workmen and *wool* come over hither, that here it may be work'd with ours: it will employ our people, and I see no reason but the trade may be doubled.

I do not as a great many that have wrote about the *woollen* affair, complain that *our trade is decayed*, for I believe the contrary, and if it were here to purpose, could give sufficient reason for my thought; but I am fully satisfied that we still have a great many idle people that might be set on work for the kingdom's welfare, and I think these ways will do it; but if others won't think so, I must think alone, and subscribe my self

Yours,

J. H.

The

The manner of making Bricks at Ebbisbam in Surrey; in a letter to the worshipful Captain James Twiford, now Sheriff of Bristol.

S I R,

According to your desire, I have procured the manner of making *brick*; and my friend tells me as follows.



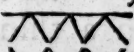
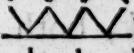
We make two sorts of *bricks*, viz. *stock-bricks*, and *place-bricks*; the *stock-bricks* are made solid, strong, and so hard, that we have laid them under a loaden *cart-wheel*, and yet they will not break.

The manner of making them is thus:

We choose a piece of earth that we commonly call *hassle-mold*, or a stiff *loam*, which is a mixture of a little *sand*, and a great deal of *earth*, without one bit of *clay*; this *earth* is with us about three foot deep, (although at some places it is twenty foot deep, as at *Casse-bolton*, and several other places) and two yards square of it will make a thousand of *bricks*, every *brick* being nine inches and a half long when it is made green, four inches and a half over, and two inches and a half thick; and the usual price with us is to pay to our *landlord* a *groat* for every thousand we deliver out ready burnt.



Before *Christmas* we begin to dig as deep as the *earth* allows, and lay it as level as can be, and end before *Candlemas*, that it may lie to mellow, that is, that the hard lumps we dig may shake to pieces, which it will do either by

help of *rain* or *frost* ; when it is thus dug, we let it lie till *Lady-day* or *Easter*, when we seldom fear fair weather. Then we water the *earth* well, and temper it with a narrow spade about five inches broad, that the workman may hold out, with which we dig it down, and then temper it with our bare-feet till it is in good case to make a *brick* on, that is, like a piece of *dough*, such as will just stick in the *mold* or *frame* when lifted up, and not fall off of it self : then we bring to the earth a table standing upon four legs, about three foot high, five foot and a half long, and three foot and a half over, and load it with as much as it will well bear at the right-hand end about half way ; at the other end are boards nailed about nine inches high to lay sand in, and in the middle we fasten with nails a piece of board, which we call a *stock* ; this *stock* is about half an inch thick, and just big enough for the *mold* to slip down upon : then we have a *mold* or *frame* made of *beech*, because the *earth* will slip easiest from it. This *mold*, *frame* or *vorder* is made of the bigness of the *brick* abovesaid, only half an inch deeper, to give way for the *stock* afore said ; and it must be shod with a thin iron of half a quarter of an inch thick, both on top and bottom, and this keeps it from breaking and wearing out : we also have upon the table, before the *mold* or *frame*, a little *trough*, that will hold about three or four quarts of *water*, which we put in, and in it a strike to run over the *mold* to make the *bricks* smooth. This strike is usually made of *fir*, nine inches long, an inch and a half broad, and half an inch thick : we have also on a little form just by the *sand-bin*, about thirty little pieces of board twelve inches long, six inches over,
and

and half an inch thick, which we call *pallat-boards*. When we are thus prepared with utensils, then one man strews *sand* on the table (as maids do *meal* when they mould *bread*) and moulds the *earth* upon it; then rubbing the *stock* and inside of the *mold* with *sand*, with the *earth* he forms a *brick*, strikes it, and lays it upon the *pallat*, then comes a little boy about twelve or sixteen years old, and takes away three of these *bricks* and *pallats*, and lays them upon a *backstead*, a rais'd place like a *balk* in a *field*, or a *border* in a *garden*; which is a piece of ground five or six rod long, two foot over, with a gutter on each side about a foot deep, and as wide a top; which is made by digging half a foot deep, and the earth that comes thence raises the *backstead*: this *backstead* must be well beaten, that it may be smooth, level, and hard, and upon it the boy lays his *bricks* edgeways, the thickness of the *pallats* one from another, on each side of the *backstead* a row, and so that the heads of each row may be two or three inches asunder, and we lay them askew, thus, and  when they are pretty hard, which in  dry weather will be in a day; then the boy lays another course crossways thus,  till they come to be ten course high,  then they are covered with *straw* till they be hard and dry, which usually is in three weeks or a month, and then we burn them. One man, without a man to temper, or boy to carry them away, but to temper and lay them himself, will make a thousand in a *summer's* day, *viz.* about fourteen or fifteen hours; but with a man to temper, and a boy to carry them, and lay them as above, he will make two thousand, and an extraordinary man three thousand in a day; and the usual price for

for this tempering, making and laying is four shillings the thousand, and the maker's part is as much as the temperer's and boy's.

Our *bricks* being thus prepared, the next matter is to burn them; which is after this manner.

When we begin a new *brick-ground*, for want of *burnt bricks*, we are forc'd to build a *kiln* with *raw bricks*, which the heat of the fire by degrees *burns*, and this will last three or four years; but afterwards we make it with *burnt bricks*, which we reckon better; and we choose for it a dry ground, or make it so by making *dreins* round it. This *kiln* we build two *bricks* and a half thick, sixteen *bricks* long from inside to inside, and twelve *bricks* over from inside to inside, and about fourteen or fifteen foot high; at the bottom we make two *arches* three foot high, three *bricks* broad, and seven *bricks* long, that is five *bricks* longer than the wall of the *kiln*, and so the sides will be a *brick* and a half each: then we set the *bricks* five course high, as they stand in the *backsteads*; then we set five courses more, and allow every course two or three inches to hang over, so that at ten course high there is a clear *arch*. Of these ten courses one must be set close, and another you may run your finger between every *brick*, and after that we set three *bricks* upon them edgeways, thus, till  they are five or six and thirty courses  high from the bottom. Then we begin with half a bavin fire at a time in each *arch*, supplying it continually till the *water-smoak* be off, which is done when the smoak begins to arise black, and usually in twenty four hours; then we put in a whole bavin at a time, and make the holes up with *bricks* four course high, to keep the fire-feeder's shins from burning;

ing; and thus we continue till they are at the top red fire hot, which is usually also twenty four hours; and then we cease our fire, and let them cool, and sell them as soon as we can, for as much money as we can get, but usually about thirteen or fourteen shillings the thousand. The prices for *making* and *burning* is seven shillings the thousand, the *wood* three shillings the thousand.

This is the account, and if it be instrumental to the setting up a *manufactory* in your country, will encourage the like attempts from

Your humble servant,

J. H.

NUMB. CCXLII.

Near 400000 chaldron of coals in a year comes to London, which in likelihood will employ 333 ships, and 3333 seamen, and 160000 people; 10 l. the year supposed more than each earn or spend. Tax on wood usefull. Pitch and coal affirmed from seacoal.

IN my last I promised some particulars about navigation, from a consideration of the coal trade; and in Numb. 3. of my second Quarto Volume, printed November the 6th, 1683. I shewed, in four sheets of paper, some advantages would accrue to us from the destruction of wood, and the encouragement of the coal trade. And although I have hinted them often, I can get no body yet to answer me; but several have followed my advice to good purposes, and few or none have turned pasture or arable to wood. I shall now, as I did then, hint something about the number of ships are, and might be employed by wood's destruction. Then I was informed came to London yearly about 300000 chaldron of coals, now well nigh 400000 chaldron; if so, then there requires 2000 ships of 200 chaldron each, to fetch them, if the voyage were but once in a year. But I will suppose six voyages in a year, and more I believe not; for though some make eight, others make not four; then the sixth part of 2000 will be 333 ships, and each twenty chaldron requires a seaman, which will make 3330: I have great reason to believe that the rest of England may consume and employ as many, which will make 6660. This

400 *A COLLECTION for Improvement*

This is a brave nursery, and if the woods were destroyed, why it may not be doubled, I see not, besides what are employed to *Norway* and other places for timber and wood.

Beside these seamen, there will be an employ for the diggers, keel-men, crimps, meeters, lighter-men, barge-men, carmen, and if we reckon that *England* earns, one with another, 10 *l.* the head, as I hinted *Numb.* 231. about the *East-India* trade, then these coals, which would employ in all ports twice 6660 seamen, will find good livelihoods for twice 160000 people, supposing coals every where to be but 20 *s.* the chaldron. But notwithstanding what some privately have objected, about peoples earning and spending, one with another, 10 *l.* the year, I question whether it be so much, for half are under 16, and half are females; and to think that every man and woman above 16, and every boy and girl under 16, put them all by fours; I say, that each such four should earn 40 *l.* the year, is beyond my apprehension.

I must confess, a great many people would be employed should we burn wood; though I do not think so many as coals; beside, in coal it is their proper trade and business.

The capitation act has laid a duty upon woods, and I could wish it were to be continued or encreased; and this out of no ill-will to the owners, but because it will force them to do themselves kindnesses, by grubbing up their woods, and encreasing our navigation.

What shall I say more of coal, except I shall tell you of one *Becker* in King *Charles* the II^d's time, who pretended to make pitch and tar from them; but I think his project came to little. Next *Friday* expect another subject from

Your's

J. HOUGHTON.



I N D E X.

A

A Cres in England supposed 28, or 29000000	Page 11
Acres of land, ten or twelve plowed in a day,	243
Acres twelve ploughed in three days with two bullocks and one man,	244

B

B Arbadoes the garden of the world,	3
Barren ground in England scarce,	15
Barley Patney or Rathripe out and in, in eight or ten weeks all years,	35
Books of husbandry and trade,	79
Bread French, the manner of making it, with considerations on the mill, water and oven,	132
The kinds, viz.	
Household bread,	134
Pain burgois, or city bread,	136
Pain de gonnefs,	137
Pain ala mountrou	138
Pain d'esprit,	ibid.
Pain d'chapitre,	ibid.
Pain d'gentilly,	139
Pain d'citroville,	ibid.
Pain benit o brioche,	ibid.
Pain d'cousin,	140
Bread stale mended,	ibid.
Ferment of cherry wine, a good yeast for bread,	ibid.
D d	Bills

I N D E X.

<i>Bills of entry and knowledge of quantities of goods imported and exported, the advantage thereof,</i>	161, &c.
<i>Bullocks better able to perform two journies a day in ploughing than horses, and the reason why,</i>	244
<i>Burning mossy-land, an improvement,</i>	300
<i>Bees, a new hive for them, with its description,</i>	375
<i>Bounty-act, a great advantage,</i>	389
<i>Brick, the manner of making it,</i>	394

C

<i>Clover, its advantages,</i>	18, 142
<i>Corn, a proposal for its exportation,</i>	109
<i>Credit, bank thereof; its manner, use and safety,</i>	145
<i>Clitherow might be improved,</i>	302
<i>Complaints made to Rhexhoboam, rather through inconsideration and wantonness, than any real cause,</i>	309
<i>Camps in David's time not used in winter,</i>	ibid.
<i>Columbus his history,</i>	317
<i>Cabot his discoveries,</i>	318
<i>Cows, the manner of choosing them for a dairy,</i>	362
<i>And breeding them,</i>	ibid.
<i>Calves, the manner of fattening them,</i>	370
<i>Core in a cow's udder; its cure,</i>	ibid.
<i>Cyder, an experiment for fining it,</i>	182
<i>Its prejudices,</i>	183
<i>Finning it. Of the fruit. Precipitation preferred before fermentation. Bottling will cause precipitation. The colder it is kept the sooner it will fine. To separate the pure from the impure. The way to make the glasses, syphons or pipes to separate the cyder,</i>	247 to 253

Dearness



INDEX.

D

Dearness of provisions to be wished for, 382
It makes manufactures be sold cheaper, and
more plentiful, 388

E

Enquiries concerning agriculture, 7, 8, 9, 10
—relating to husbandry and trade by Robert
Plot, LL. D. viz. particularly concerning wa-
ters, earths and minerals, stones, metals, plants,
husbandry, animals, arts, 288 to 299

Enclosures, a great improvement, 10

—Probable to encrease us 20000000, ibid.

—Reasons for it, 11

—Ways to do it, 16, 18, 144

—Its advantages, 16, 17

Engine, one that will wind eight skeins at a time, 121

East-India company may be a great fund. Their
debts and stock, 148, 149

Exportation of money the cause of our plenty, 321

Edgar King of England had at one time 4800

ships, 324

Excise on drink, to have it large a great advantage, 391

—Of a groat a pound on wool, a great advan-
tage, ibid.

F

Furzes French, a great improvement of sandy
land, 29

A fence to young hedges, 30, 31

French King, a provident father of his country, 312, 313

I N D E X.

The fowls, a disease in the feet of oxen; their cure,
368

G

G *Rafs long grew by Draper's hall in 1665,* 51
Guinea company hopeful, 149
Goods imported to, and exported from London in
January 168 $\frac{2}{3}$, 163, &c.
Ditto in February 168 $\frac{2}{3}$, 178

H

H *oarding of money by the Prince doth not*
always impoverish the subject, 306, &c.
Henry the Seventh, the only King of England that
ever hoarded much money, 313. *His great care*
for his people, 315. *The treasure he left behind*
was near 1800000 l. sterling, 316. *He made*
London always like a term, and thereby en-
creas'd his own and subjects wealth, 318
Hoarding of money, its consequences, 319

I

I *reland growing rich will be for the safety and*
honour of the crown, and wealth, and improve-
ment of England, 44, 45
Mr. Thomplon's design in Ireland, if it had taken,
would have done no hurt, 47, 48
Irish act defended, 82
— It improves our land, 84
— Their manner of living, 92

K

K *ingdom not enriched by our trading among our*
selves alone, 28
Licorice

INDEX.

L

- L** *Icorice profitable to increase,* 41
 — *Manner of planting and curing, with likely profits,* 42
Land, labour and provision cheap, doth not always get a trade to a country, 103
Linen manufacture, a proposal for gaining it here, 117
 — *Yarn coarse, the prices in book of rates,* *ibid.*
 — *Cloth coarse, the prices in book of rates,* 119
 — *Three farthings an ell one with another,* 121
Liming mossy-land, an improvement, 300
Lambs, their manner of fatting, 372

M

- M** *Oney, the matter and use thereof,* 25
 — *Of no use, unless parted with,* 26
 — *Hasty importation thereof may be a prejudice,* 28
 — *Raising its denomination no advantage,* *ibid.*
 — *Offered to the East-India company at three per cent. and refus'd,* 146
 — *Small, a proposal to supply its defect,* 238.
Marle, its method of using, 58, 123, 124
 — *Its different sorts,* 124, 125
 — *Place and manner of residence,* 126
 — *Preparing the pit, ground, and getting out the marle, &c.* *ibid.*
Malt, manner of making it at Darby, 66
 — *Description of best barley for it,* 67
 — *A rare kill describ'd,* 73
 Carrying it out, in effect no other than carrying out our product or manufacture, 268
Mum, the manner of making it, according to the direction

INDEX.

<i>direction recorded in the town-house of Brunf-</i>	
<i>wick,</i>	299
<i>Mossy-land, its improvement,</i>	300, 301
<i>Men, fifteen hundred and seventy thousand at one</i>	
<i>time that drew sword in Jewry, besides Levi</i>	
<i>and Benjamin,</i>	310
<i>Milk, its difference,</i>	362

O

O <i>ken, stationary and portative of Dr. Kepler,</i>	141
<i>Oxen, the manner of breeding, cutting or geld-</i>	
<i>ing them,</i>	364
<i>—The manner of teaching them to draw and</i>	
<i>fatting them,</i>	366

P

P <i>rofits draw people,</i>	14
<i>Instances thereof,</i>	ibid.
<i>Plantations English do increase or improve rather</i>	
<i>than depopulate,</i>	37
<i>—The more sent thither, in likelihood the more</i>	
<i>here,</i>	39
<i>Spain not prejudiced by plantations,</i>	52
<i>Prodigality among our selves no prejudice,</i>	55
<i>Prodigal's character,</i>	56
<i>Parsley an improver of land, good for sheep and co-</i>	
<i>nies,</i>	142
<i>—The finer the ground for it, the better the crop,</i>	
	143
<i>Protestants French advantageous,</i>	243
<i>Plough extraordinary, their description,</i>	245
<i>People may be increas'd by the destruction of wood,</i>	
	262, 263

Ships

INDEX.

S

- S***Hips, their number entered into, and cleared out from London in January, 168 $\frac{2}{3}$,* 181
- Society Royal, a great collector and encourager of useful things,* 1, 2
- *Their motto, Nullius in Verba,* 3
- *A catalogue of books in their library relating to husbandry,* 5
- Sandy lands cured,* 15
- Spinning much improved by Mr. Thomas Firmin,* 31
- Smut prevented,* 34, 49, 50
- Salt cures rot in sheep,* 143
- *its description, viz. Spanish, Portugal and French, Scotch and Newcastle. Salt upon Salt. Port-sea island, and places adjacent,* 254, &c.
- Subscriptions for lives; proposals made to increase wealth thereby,* 148
- *Objection and answers,* 152
- *Its advantages,* 157
- *Proved from Sir William Petty's observations on the bills of Mortality,* 158
- *For whom useful,* 159
- Sailing plain, made more plain in three particular methods,* 211
- Safflower, its price at London. Of its cultivation, gathering and curing. It will not endure the shade. It doth not impoverish land. Its seed fats turkies, geese and colts,* 353 to 360

T

- T***Uscany, their farms and living,* 12
- Trade, end thereof,* 24
- *Matter thereof,* ibid.
- *Ways*

I N D E X.

—Ways of getting it,	63
Thriving of a place, an argument thereof,	110
Turnips fatten sheep,	144
Treasures of David. Of Solomon. Taxes, the reason of them in Solomon's time. Advanta- geous to his subjects. Tanks in the Mogul's country. The reason of them. Troopers better for husbandry and trade than foot soldiers,	306, &c.

W

W Heat, red-stalk'd, seldom or never smutty,	34
—long cone, not subject to lodging, or being eaten by birds, or mildew'd,	ibid.
Wood, destruction thereof a happiness,	57
—Growing within twelve miles of a navigable river, a great damage to the kingdom. Illu- strated by matter of fact. And a supposition Objections answered,	258, &c
Woodcocks, the manner of their curing in Lanca- shire,	112
Water salt, made fresh,	240

F I N I S.



